REDEFINING THE COMMUNITY HOSPITAL:

A SMALL TOWN APPROACH TO

MEDICAL PLANNING & DESIGN

A Thesis
Presented to
The Academic Faculty

by

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REDEFINING THE COMMUNITY HOSPITAL:

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This body of work is dedicated to my wife Nicole.
Words cannot express what you mean to me.
All I can do is thank God every day for the gift that he has given me.
You are my muse and inspiration.
Your love and understanding have been my comfort.
I could not have made it through this journey without you.
I love you.

ACKNOWLEDGEMENTS

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- Access to adequate care is a large problem for these areas
- Most of these hospitals are serving a large and growing elderly population
- Most of them serve poverty stricken areas
- They all struggle to recruit and retain staff
- They all struggle to maintain facilities and update technology
- They all contend with a high amount of governmental reimbursement such as Medicare and Medicaid instead of traditional insurance carriers.
- These hospitals are all financially challenged
- Despite their faults and their current situations we still need rural hospitals to help care for the people in these remote areas

PART TWO: RESOLUTION STRATEGIES

- Rural hospitals need to find new ways of community integration to help improve the overall health of these rural areas. One way to achieve this is by replanting itself directly into the most populated area, the middle of the downtown sector. From here these facilities can help to foster the revitalization of these urban cores which in many cases have become blighted areas.

- Rural hospitals have to find new ways to help supplement their underperforming facilities and improve their overall financial situation. They can do this by incorporating a broader program with different types of spaces into their facility. The facility could gain help with the construction costs if they incorporate community spaces.

- Rural hospitals have to offer an appropriate scope of services to the community so that they do not over extend their scarce budgets into additional unprofitable areas.

- Rural hospitals need to improve the quality of care that they are able to provide to their constituents which can be achieved through the design of their facilities.

PART THREE: DESIGN EXERCISE

- Urban Design - The overall premise is to create a building, and eventually another area of town, that is pedestrian based and dedicated to promoting the physical and financial health of its residents by helping to revitalize the area.

- Building Design - The building has to remain respectful to its surroundings and the design must be planned for expansion during the initial phases.

- Community Features - The ultimate goal in introducing community features into a facility like this is to help change the current level of interaction between society and healthcare while also providing much needed services and spaces to entities that could not typically afford them on their own.

- Services - Let the facility offer to its constituents the main services that would allow for them to live healthier and less stressful lives. It should provide what is needed based on the specifics of the community and nothing more.

- Evidence-Based Design - With these features the facility can achieve a higher quality of care that is not typically available in these smaller settings. The goal is to add as many as possible to the facility without drastically expanding the building footprint or the existing budget.

PART FOUR: TESTING

- The ideas of community building and town revitalization are areas where the hospitals have a chance to make a change. Most of the benefits of an in-town site were related to these two ideas.
- Urban design concepts and considerations about controlling sprawl generally rank lower on an overall importance scale within these smaller communities.
- Costs and size are major issues when planning a new facility.
- Physical and spiritual health, Healthcare Education, and public gathering are important factors within the concept of integrated community features.
- Lease spaces should be hospital or physician related.
- In relation to the recommendations proposed within Chapter 6 of this thesis about services offered, 8 out of 10 services had a consistent showing as being recommended for one of these facilities in all surveys.
- Evidence-Based Design is a growing field of interest and implementation within the healthcare community.
- Facility expansion is a huge topic when considering a constrained site
- Properties peripheral to the hospital site and who has control over them is an important issue because it can have a huge effect on the overall development of the area.

PART FIVE: REFLECTIONS

- In-town hospitals are a viable option for the betterment of the overall community.
- Costs are a significant issue for these small facilities but these problems can be overcome through careful planning and intelligent design.
- The building should be pushed out to the edges of the site and the facades of the building should be lined with publicly interact able spaces
- Parking should be concealed and housed in parking decks
- Development control of properties peripheral to the hospital site is an important topic to consider
- Buildings should be pre-designed to be expandable
- There are 8 main healthcare services that should be provide by an in-town rural hospital to its community.
- There are 5 community features that should be incorporated by an in-town hospital to help revitalize the surrounding areas.
- There are 7 Evidence-Based Design features that should be incorporated into the in-town rural facilities to increase the quality of care that they are able to provide to their community.

CHAPTER 1

INTRODUCTION

The rural hospital in America has the duty and responsibility of providing adequate healthcare services for the surrounding community. This burden is troublesome for these entities because it usually means trying to offer more technologically current services for a smaller population base that the hospitals cannot really afford to provide. These hospitals have to determine if and how they are going to offer these types of services and what this decision means to their business in terms of the resulting facilities and personnel that they will require. These weighty burdens, teamed with a lower patient volume based on population, and in turn lower revenues, make it much harder for these remote hospitals to afford the current and adequate facilities that they need on budgets that are much smaller and tighter than hospitals in larger and more affluent communities. Their remote locations, currently inadequate facilities, and the lower overall economic levels in most of these rural areas, also make it harder for these hospitals to recruit the specialists that they need to hire to provide the services required to help care for their local constituents. In many of these cases, the local hospital has become one of the major employers within the town, making it very economically important to the community that it remains in business.

In response to the issues listed above, many of these hospitals have been trying to fully replace their existing facilities instead of adding onto them or renovating them. The current scenario encountered in many of these small towns is when most of the older, original hospitals are finally able to be replaced, they are being relocated from their current in-town sites to greenfield sites usually located on a local highway that leads out away from the city center. Much of the decision about the location and placement of these new facilities is financial in nature because funds are scarce and the land in these

undeveloped areas is cheaper and plentiful enough to allow ample space for the new and typically larger hospital. It also allows room for additional growth of the facility. This shift, however, considerably reduces the possibility for any direct social interaction between the hospital and the town. The relationship between these two entities is an important factor that commands much more careful consideration than it is currently being given in these situations. Placement decisions not only affect the social structure of the town, but environmentally, dismiss many of the efforts being suggested by Smart Growth advocates and urban planners who are vehemently promoting land conservation, adaptive re-use, and sustainable design. The removal of these facilities from the inner town areas has an exponentially negative effect on an already stressed local economy by affecting the volume of the local businesses that rely directly on the daily hospital population and traffic for their livelihood.

Beyond just the social and environmental implications that are tied to the relocation of these new facilities, there are also economic impacts that these decisions impose onto the surrounding area. Currently many residents, by choice, travel to other cities for medical treatment. Much of the decision regarding whether to get care locally or elsewhere is primarily driven by the patients' perceptions of the quality of care that they will receive from the local hospital, or the availability of the services that they require. This commuting effort can be financially taxing on the affected families, but more importantly, this situation eliminates many of the valuable revenue opportunities that could be available on a daily basis to the hospital facility and the local economy.

Resolution Strategies

Location

This thesis will be primarily concerned with proposing an alternative to the current out of town placement of these future facilities by specifically looking to determine how the facility could be placed on a current in-town site and engage the surrounding context of an existing town to foster a heightened sense of harmony within the environment. These facilities have the opportunity to conserve land and resources by relocating closer into a town, or even by re-integrating themselves directly into the local context as part of the town square, taking cues from the planning principles of the New Urbanists. The goal would be to create more walkable, accessible institutions that could help to revitalize the immediate downtown areas surrounding the hospital. This section of the thesis will look at the beneficial aspects associated with current design and location trends for replacement rural hospitals and also the issues created by the proposed relocation of these new facilities to an in-town versus out of town site.

Integration

These facilities also have an opportunity to foster new ways of funding construction while at the same time redefining themselves within the community. They can achieve this by instituting a much broader program than would necessarily be required from an urban hospital serving a similar size population base which would include more joint use and community spaces. This section of the thesis will be concerned with determining what portions of the community contain overlapping functional and spatial requirements with current hospital functions. This effort will look to combine these items in ways that are beneficial to both entities through shared land and construction costs. We will also look into determining new types of joint community/ hospital activities or amenities that could be incorporated into one of these new facilities

to help bridge the public/private gap between the hospital and the surrounding town. By broadening the scope of its program, the hospital will help to increase the overall interaction between the caregivers, the patients, and the families turning the hospital into a truly communal facility.

Services

The next part of the thesis will be concerned with the determination of a scope of services that can be appropriately offered by a new facility of this type to its constituents. This information will be extracted through a survey of comparable facilities and population databases that will be created and analyzed in an effort to try to determine correlations between community size, facility size, facility costs, and services offered. Interviews will also be conducted with several hospital administrators from currently similar sized rural facilities, as well as some local design professionals who specialize in planning these types of facilities to help in the determination of appropriate services. The final determination of services will have an effect on the eventual size and departmental configuration of the future facility.

Features

This portion of the thesis will contain an evaluation exercise to determine what a "current and adequate" healthcare facility contains in terms of implemented Evidence-Based Design (EBD) research features. Much of the research involving these ideas focuses on increasing safety within a facility, reducing stress for all parties involved in a situation, and improving the patient/family experience, as well as others. The ultimate goal within this exercise is to figure out how to incorporate these types of beneficial programmatic elements while still keeping prices tolerable within the budgetary framework of the hospital and the community. Many of these features have a size and

spatial effect on the planning and design of these facilities, which will be important to consider when dealing with a smaller in-town site that this thesis will propose.

Design Exercise

Once the research has been completed, the next section of the thesis will be executed in the form of a design exercise. This portion of the thesis will attempt to demonstrate how the developed design strategies could address some of the identified relevant issues determining how they can be directly resolved within a design project or projects.

Testing

This section of the research will primarily be concerned with testing the viability of the proposed resolutions through an internet based survey administered to a large number of hospital administrators and design professionals throughout the southeast. There will also be interviews conducted with a small number of hospital administrators who are in charge of currently similar facilities and some design professionals that are involved in planning these types of facilities about the initial design exercise. The design exercise will then be reviewed, critiqued, and analyzed in terms of its resultant successes, failures, and trade offs, with any new issues that are revealed from the study being documented to see how they will need to be considered in the future design of these types of facilities.

Reflections

The survey results and interviews will then be reviewed, critiqued, and analyzed against this thesis to determine resultant successes, failures, and trade offs that need to be reinvestigated or considered in the future design of these types of facilities.

PART ONE: THE PROBLEM OF THE RURAL HOSPITAL

SUMMARY

- There are many rural hospitals
- Many of the areas that they are located in are in poor health status and are medically underserved
- Access to adequate care is a large problem for these areas
- Most of these hospitals are serving a large and growing elderly population
- Most of them serve poverty stricken areas
- They all struggle to recruit and retain staff
- They all struggle to maintain facilities and update technology
- They all contend with a high amount of governmental reimbursement such as Medicare and Medicaid instead of traditional insurance carriers.
- These hospitals are all financially challenged
- Despite their faults and their current situations we still need rural hospitals to help care for the people in these remote areas

CHAPTER 2

DEFINING THE RURAL HOSPITAL

In reference to the term rural community hospital, a valid question to ask is what exactly we mean by the term "rural." There is much debate today in our society about what the term means and what actually classifies as "rural". The U.S. Census Bureau "uses the term 'rural' to classify regions containing populations of 2,500 people or fewer, or unincorporated areas with population densities below 1,000 people per square mile. The census classifies all that is not "urban" as rural. Consequently, areas that are designated 'rural' can vary widely."[1] Most of the, "researchers and others who discuss conditions in 'rural' America most often refer to conditions in nonmetropolitan areas"[2] This last designator is typically the definition that we will be using and how we will be referring to these areas within this particular research.

For the purposes of this thesis we will primarily be looking at the term rural and its relationship to a particular entity, which we will designate here as the State of Georgia. The information throughout this report will be comprised of national statistics that will then be correlated with or compared to local statistics from within the State of Georgia. This will enable us to focus on a smaller and more detailed information base in order to assess local problems and to test proposed theories.

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[1] Gursky, Elin A. "Hometown Hospitals: The Weakest Link? Bioterrorism Readiness in America's Rural Hospitals." edited by ANSER Institute for Homeland Security: National Defense University Center for Technology and National Security Policy, 2004. pp. .13

[2] "USDA Economic Research Service." United States Department of Agriculture, http://www.ers.usda.gov/. [cited 2007 January 31]

Initial Data

Research began on this section of the thesis by constructing a detailed database of 50 hospitals from information contained in a national publication, Healthcare Design Magazine, which chronicles and documents new healthcare facilities throughout the U.S. The projects selected were the first 50 community hospital projects that were documented in 2004 – 2006 additions of the publication. The articles displayed project specific information that we were hoping would give some insight into the national picture of healthcare facility costs and sizes so that we might be able to see how they related to the smaller rural facilities that the thesis is focusing on. This information is included here in Table 2.1. See Appendix A for the complete list of database information.

Table 2.1 – National Community Hospital Database Summary

National Database of Select Community Hospital Construction Completed Recently (2000 – 2006) - info from Healthcare Design Magazine		
Number of Hospitals In Study	**50**	Hospitals
Average Population of Cities	**213,859**	People
Average Overall Cost of Construction	**$ 50,269,993**	
Average Square Footage of Construction	**208,989**	Sq. Ft.
Average Cost Per Square Foot of Construction	**$ 240.54**	
Average Number of Beds Per Hospital	**122**	Beds
Average Cost Per Bed	**$ 412,785**	

The averages from this study look rather large in comparison to the small rural hospitals that will be the focus for this study. All of the numbers within this study appear

to be on a scale of at least 3 – 5 times larger than the numbers expected in relation to these smaller rural facilities. The only number that seems like it could be somewhat in line with and relevant to this study is the cost per square foot of the facilities listed. They seem generally in line with other figures that have been uncovered in this research for the time period that they are from. They will have to be adjusted for the current economic conditions found in construction today. From the abundant excess contained in all of the other figures though, it appears that a random national sampling of projects may not yield much in terms of truly relevant information that will be useful to this thesis. Having come to this realization, a search began for a smaller and more relevant market segment that could be considered more suitable for this thesis. A closer look was taken at the State of Georgia and its current healthcare system.

The next section of the research was continued by constructing a detailed database of information on hospitals solely within the State of Georgia. This information was gathered from a website called the American Hospital Directory.[3] This website contains the name, location, and bed size of all hospitals, as well as hospital profile information compiled from multiple government and commercial sources. There is also other valuable information contained here on many items including what services are offered as well as staffing, which will be referenced later in this thesis. The information found was then compared with the population information for each town which was taken from 2000 U.S. Census information.

An interesting result that came from analyzing the initial data was that out of the 189 hospitals located within the state, 84 were listed as having less than 50 licensed patient beds. This demographic of focus makes up 44 % of the facilities listed which is the largest segment. Many people in the field view this as a threshold number between a

[3] "The American Hospital Directory." American Hospital Directory, Inc., http://www.ahd.com/. [cited 2006 October 12]

small and a medium hospital. This statistic is pleasing because it means that the research results have the potential ability to help and be applied to a larger market segment than was originally expected. Figure 2.1 displays the bed count range breakdown of the information on the hospitals that was acquired from the American Hospital Database website.[4]

Data Analysis

The Georgia Hospital database above was then pared down to contain only hospitals with less than 50 licensed patient beds. Many of these facilities are located in small communities throughout the state which appear to serve smaller population bases. Hospitals with no licensed beds or hospitals in metropolitan areas were removed from the list to make it closer to the rural demographic that we are seeking. This list was then re-expanded to contain hospitals that contained less than 60 patient beds within Georgia. The re-expansion of the list was made due to professional knowledge of the particular locations, facilities, and personnel, and finally how they fit within this proposed thesis. These additional facilities were also added to help define the upper end of what we could consider as rural facilities in regards to size and population served. We then can compare and contrast what they are able to offer in terms of size and services to their communities against the smaller facilities that we will mainly be looking at.

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[4] "The American Hospital Directory." [cited 2006 October 12]

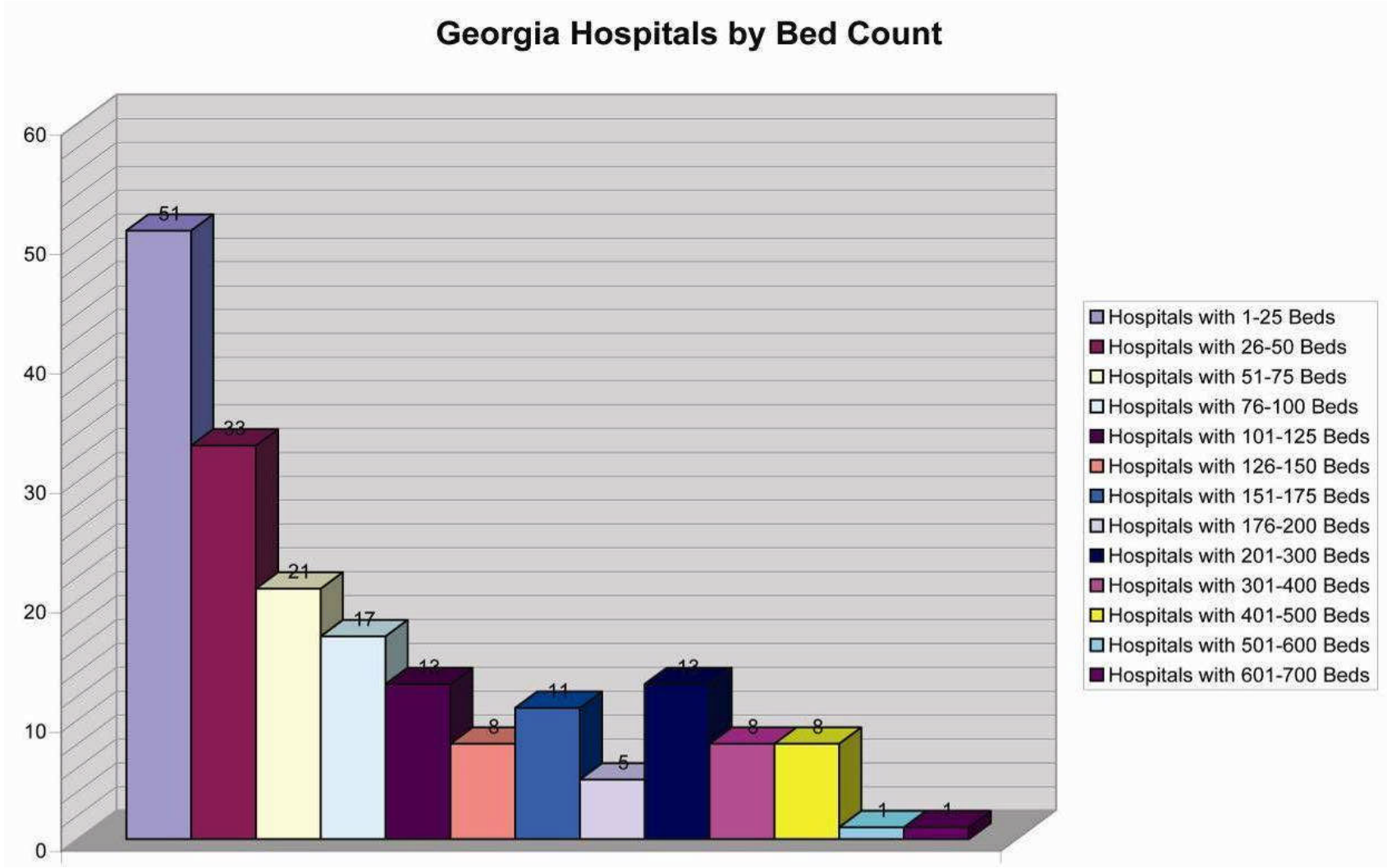

Figure 2.1 – Georgia Hospitals by Bed Count

Final Facility Classification

Table 2.2 shows the final information that was extracted from the information available on the American Hospital Directory website regarding facilities with less than 60 licensed patient bed as well as all other smaller facilities. This data was current as of November 2006. From this information, and specifically for the purposes of this study, we are defining these rural facilities as hospitals that contain 60 licensed beds or less with a local town population of less than 10,000 people.

Table 2.2 – Georgia Hospital Database Analysis of Rural Facilities Summary

Number of Hospitals In Study	57
Number of Critical Access Hospitals In Study	34
Average Number of Beds Per Hospital	35
Average Number of Services Offered	10
Average Number of Hospital Employees	120
Average Population of Towns	4003
Average % of Population Employed by Hospital	4.50%

Many of these facilities are also currently classified as Critical Access Hospitals, as shown in Table 2.2, but this is not currently an area of research entered into as part of this thesis. Although the CAH program is very helpful because these facilities receive extra monetary support from the state, many of the federal limitations placed on these facilities are too restrictive, requiring a more straightforward and linear design and a diminished operating capacity. This thesis will propose that within these small towns, these facilities need to stay as flexible as possible to allow room for them to adjust to trends in the current healthcare market in order to stay afloat.

By definition a Critical Access Hospital (CAH) is "a hospital that is certified to receive cost-based reimbursement from Medicare. The reimbursement that CAHs receive is intended to improve their financial performance and thereby reduce hospital closures….CAHs are certified under a different set of Medicare Conditions of Participation (CoP) that are more flexible than the acute care hospital CoPs."[5] The criteria specify that the facility must be a non profit or public hospital that is located in a rural area. The hospital must provide 24-hour emergency care services and not have more than 25 acute care inpatient beds. There is also a length of stay limitation of 96 hours.

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[5] Critical Access Hospital Steering Committee for The Rural Health and Hospital Technical Advisory Committee. "The State of Georgia Rural Health Care Plan to Establish Eligibility for Critical Access Hospital (CAH) Status." edited by Health Strategies Council: Rural Health and Hospital Technical Advisory Committee of the Health Strategies Council, 2000. pp. 39

CHAPTER 3

ASSESSING THE SITUATION

The ultimate goal of medical care is to foster the health and well-being of individuals within a society. The White House National Economic Council has recently supported this goal by stating that, "every American deserves reliable, high-quality, and reasonably priced health care that will be there when needed … [and also adding that it] has to be affordable, transparent, portable, and efficient."[6] Within rural America, and especially in the Southeast, a tremendous amount of the burden of providing this much needed care falls on the local community hospitals. These facilities have the duty and responsibility of providing adequate healthcare services for their surrounding community. This substantial load is troublesome for these entities to bear because, "geographic isolation, limited specialized medical services, and a generally constrained budget often render rural hospitals unable to provide care in the just-in-time manner of urban hospitals and emergency facilities."[7]

Throughout the U.S. and especially in the Southeast, "economic development, education, transportation and other problems have contributed to the creation of critical health problems in rural communities."[8] In having to deal with issues like, "low patient censuses, sluggish economic conditions and heavy reliance on government payers, small and rural hospitals must stretch scarce resources to meet a multitude of competing needs,

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[6] "Reforming Healthcare for the 21st Century." edited by The National Economic Council: The White House, 2006. pp. 1

[7] Gursky, pp. 9

[8] Critical, pp. 5

and investments."[9] The problem is that the residents in these rural areas have a right to high-quality health care just like everyone else in our country. This is the main reason that these rural hospitals have to determine how they are going to provide the different types of services they need to so that they can adequately care for their community. They also have to consider exactly what these decisions mean to their organization in terms of the resulting facilities and personnel that will be required to support them.

Core Problems

According to the Rural Health and Hospital Technical Advisory Committee to the Health Strategies Council of the State of Georgia, there are specific core problems that most rural healthcare providers face when trying to provide necessary care for a community. These include, but are not limited to, the health status of the local area, the demographics of the local served population, the patient volume of the facility, appropriate staffing, the ability to make capital improvements, economies of scale, and the problem of having to deal with a large volume of governmental reimbursement such as Medicare & Medicaid.[10] All of these factors in turn have a substantial effect on the overall financial viability of the systems of care present in these small communities. This last issue is a major area of concern for all of these facilities because they have to keep their doors open to be able to serve their communities.

Health Status

Most rural communities have indicators which show or suggest that these remote areas typically have overall poorer health than most urban and suburban areas with similar size populations. One of these indicators, "infant mortality rate, is a critical

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[9] Serb, Chris. "Small and Rural It Challenges." *Hospital & Health Networks Magazine* 2006. pp. 1

[10] Critical, pp. 5

measure of access to healthcare services [within an area}. Georgia ranks 48th in the nation in infant mortality."[11] Due to this and other related factors, "the health status of [most of] these 2,192,876 people who reside in rural Georgia is [considered] fair to poor."[12] According to the Georgia Department of Community Health, of the 159 counties in Georgia, 117 of these are rural with the majority of these counties being classified as having "Fair" to "Poor" health status. The majority of the counties within the state, 66% (107 counties) are considered to have a "Fair" health status and 16% (25 counties) are classified as having a "Poor" health status. Only 18% of all counties within the state, 28 of the 159 counties, are considered to have a "Good" health status. See Figure 3.1

Part of this situation is due to the fact that, "some illnesses are more prevalent in rural populations … [and that] residents in these areas are at a greater risk because of limited numbers of rural health professionals and organizations available to respond to their health needs."[13] A staggering and related assessment is that, "though thirty-two percent (32%) of Georgians reside in rural counties, approximately forty percent (40%) of those who die each year [within the state] are rural residents."[14] Much of this has to do with the fact that, "these [rural] counties are often characterized by dangerous occupations (e.g., mining, farming, logging), dangerous recreational activity (e.g., hunting and swimming in farm ponds), unsafe homes (e.g., increased fire risks), and

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[11] Critical, pp. 13

[12] Critical, pp. 14

[13] Gamm, Larry, and Linnae Hutchison. "Rural Healthy People 2010 - toward Healthy Rural Communities." edited by Southwest Rural Health Research Center - School of Rural Public Health: The Texas A&M University System Health Science Center, 2004. pp.

[14] Critical, pp. 15

adults and children working with dangerous agricultural equipment, pesticides, and herbicides."[15]

Although rural communities, "have an obvious need for a full spectrum of health services commensurate with those offered to urban communities, current reports indicate that these areas remain relatively underserved by the medical community."[16] This has led to a situation where most of these areas are designated as Medically Underserved Areas or MUA's. See Figure 3.2. What is more concerning is that within these areas "even where health care services are readily available, individuals may not have a usual source of health care or may experience barriers to receiving services due to financial or insurance restrictions, a lack of availability of providers at night or on weekends, or other difficulties."[17]

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[15] Critical, pp. 15

[16] Gursky pp. 16

[17] Medical Expenditure Panel Survey. "Access to Health Care in America - 1996: Estimates for the U.S. Civilian Noninstitutionalized Population." 1-4: Agency for Healthcare Policy and Research, 1997. pp. 1

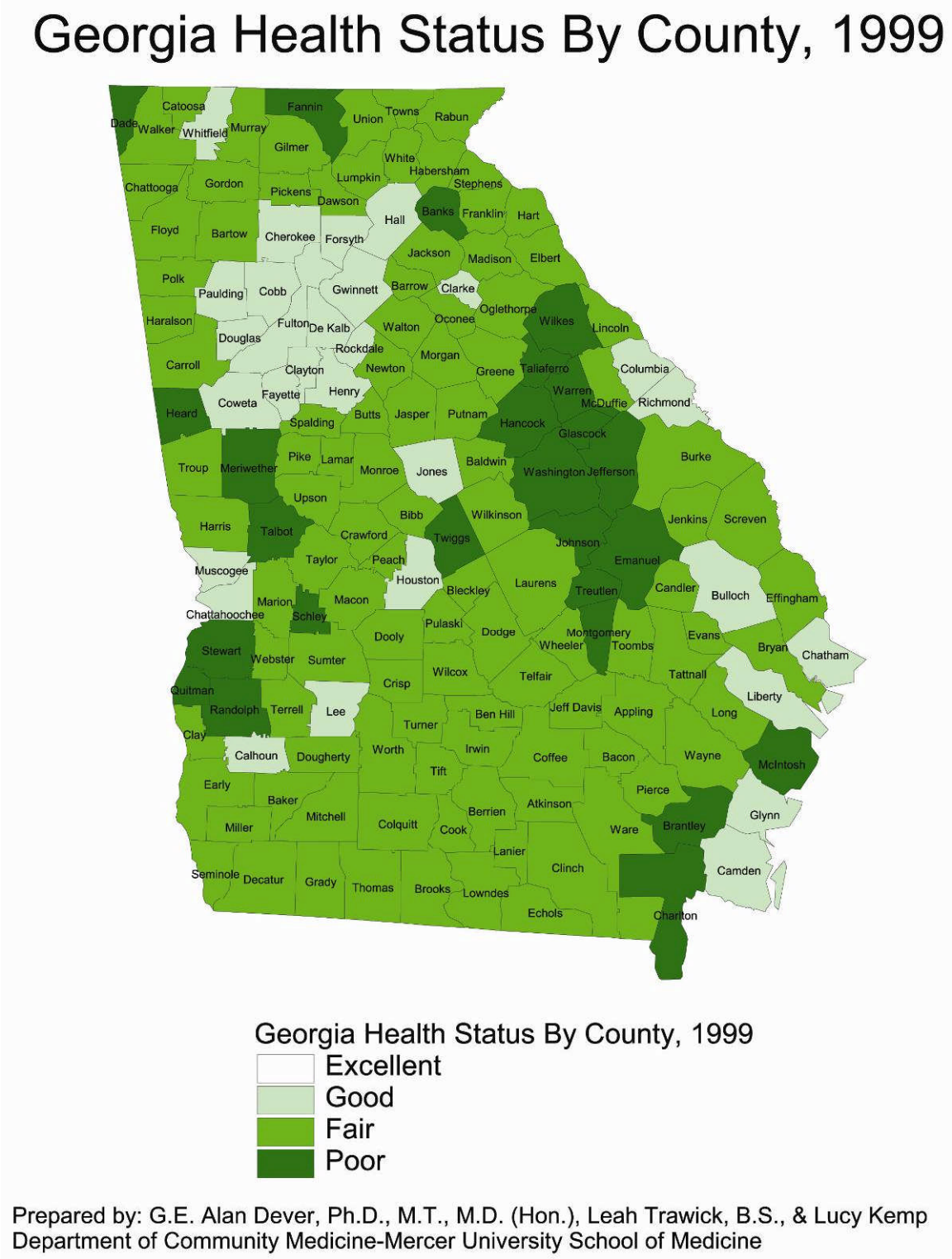

Figure 3.1 – Map of Georgia's Health Status by County

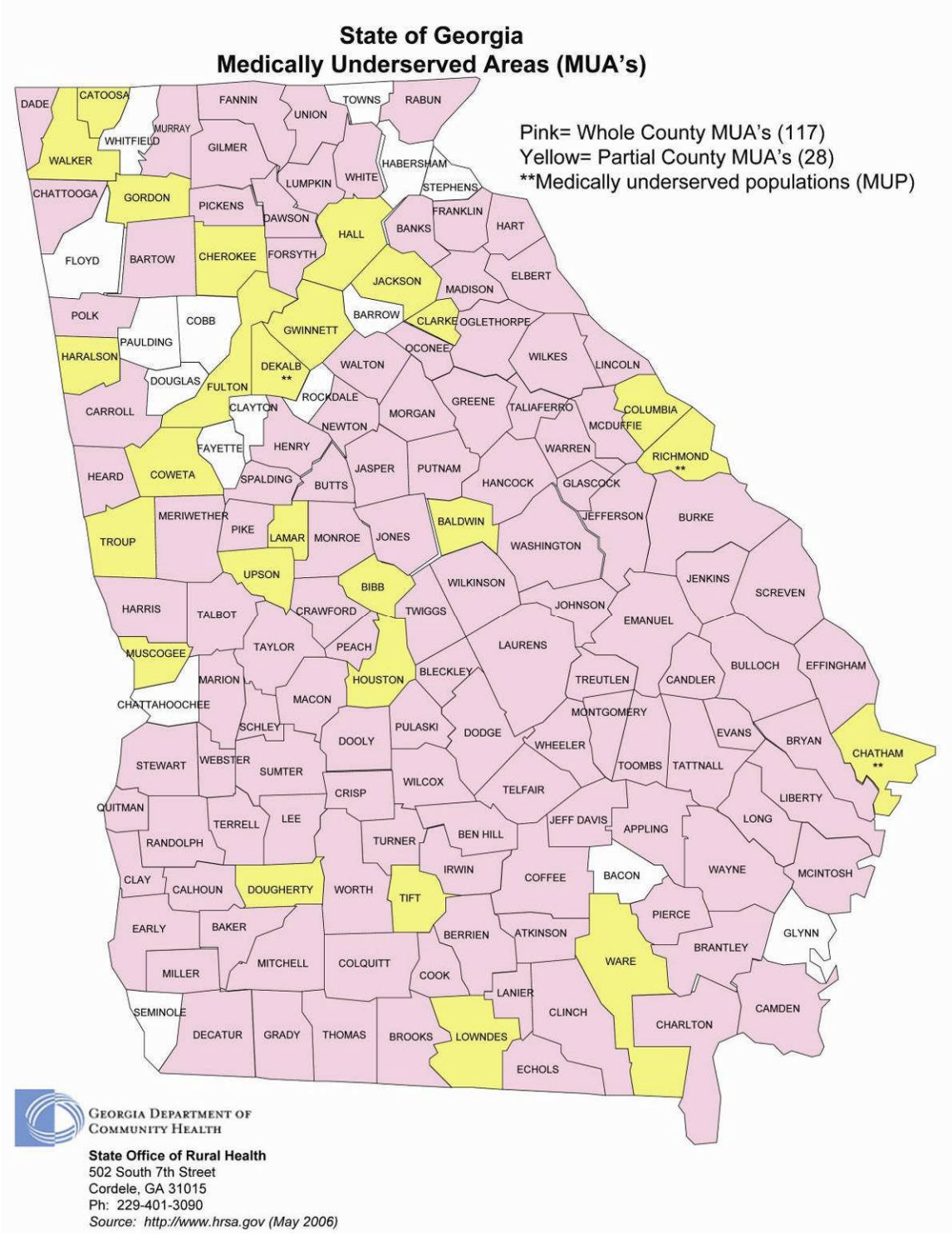

Figure 3.2 –Map of Georgia's Medically Underserved Areas

Population

Policy makers and researchers have found that, "the demographics, culture, and structural conditions of rural settings are associated with the insurance status and health care use and expenditure patterns of rural residents."[18] There are many variations contained in these demographic factors, "such as age, sex, socioeconomic status, and physical health across geographic areas [that] can provide insight into differences in health care use and expenses. For example, people living in rural areas are more likely to be elderly and more likely to have activity limitations than residents of metro areas."[19]

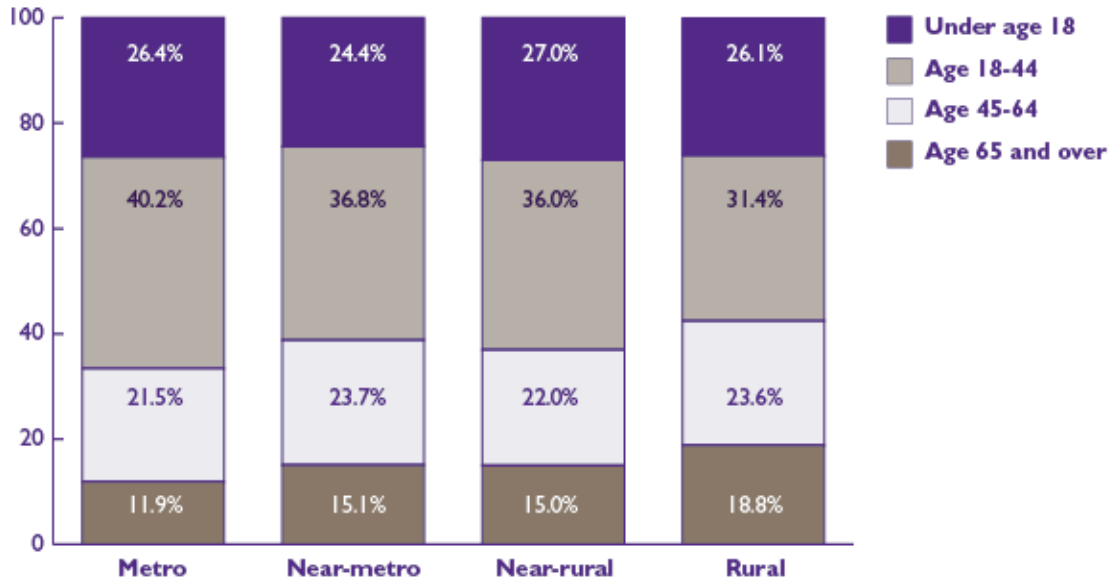

Figure 3.3 – Age Percentage by Area Type within the U.S.

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[18] Larson, Sharon L., Steven R. Machlin, Alice Nixon, and Marc Zodet. "Health Care in Urban and Rural Areas, Combined Years 1998-2000." In *MEPS Chartbook No.13.*, 1-48. Rockville, Maryland: Agency for Healthcare Research and Quality, 2004. pp. 7

[19] Larson, pp. 11

Figure 3.3 shows us clearly that rural areas contain the highest percentage of elderly people within the United States. This information is according to a 2004 study by the U.S. Department of Health and Human Services.[20] This is an important statistic to note because the elderly population makes up a large percentage of the overall healthcare usage, and in turn revenue base, for the hospitals within these smaller communities that we are researching.

Within Georgia alone there is a large mix of ages and ethnicities within the communities that we are looking at. Figure 3.4 displays the age breakdown within the state while Figure 3.5 displays the demographic composition of Georgia broken down by type of region.

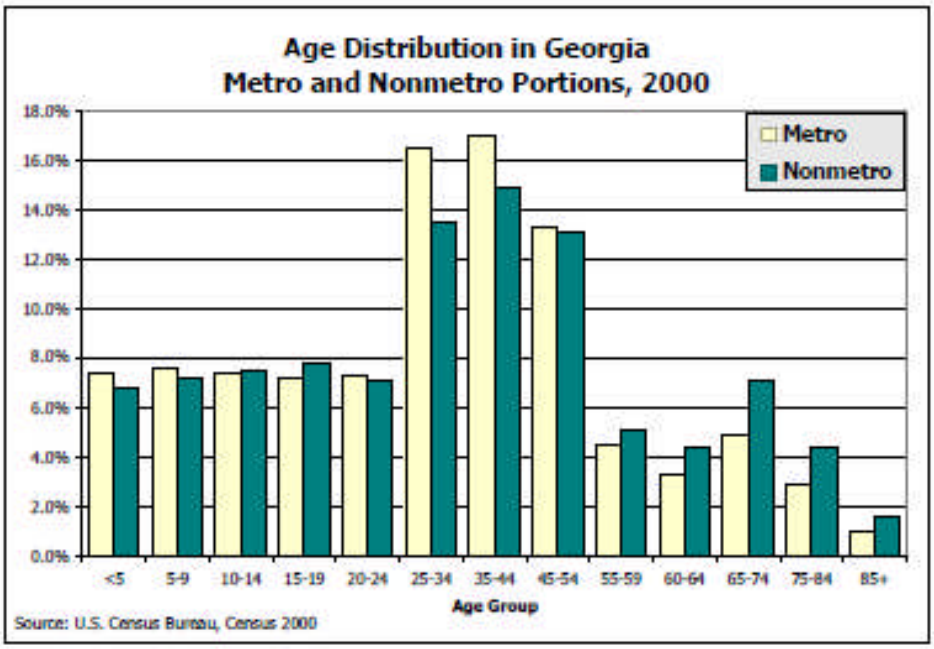

Figure 3.4 – Age Composition of Georgia

[20] Rural Policy Research Institute. "Demographic and Economic Profile - Georgia." edited by Kathleen K. Miller, 1-17. Columbia, Missouri: Truman School of Public Affairs at the University of Missouri-Columbia, 2006. pp. 5

The ethnic breakdown within the state is generally typical across the different region types, which makes it a little easier to understand the communities that we are dealing with. Typically we find a white majority followed by a large portion of African Americans that make up the next biggest demographic. The rest of the population is rounded out with at least 6 other ethnicities that have significantly less numbers compared to the first two segments.

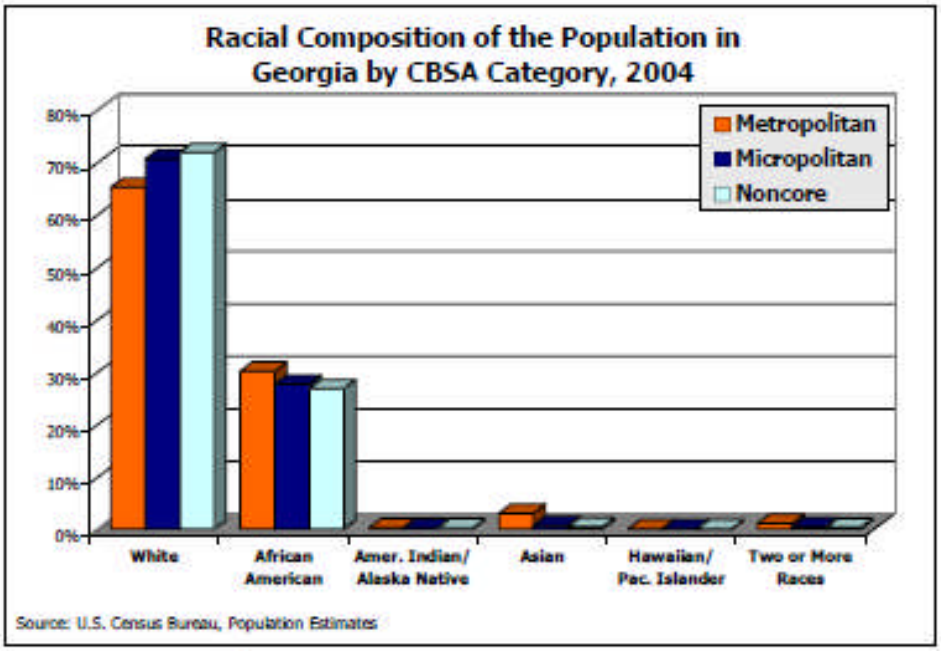

Figure 3.5 – Racial Composition of Georgia by Area Type

Another issue to consider is that while the population in these remote areas is typically elderly and progressively getting older, it is also declining. Information from the US Census Bureau shows us that between the years 2000 to 2005, 34 counties within

the state of Georgia experienced population declines, with 25 of these counties being classified as non-metro or rural areas.[21] See Figure 3.6.

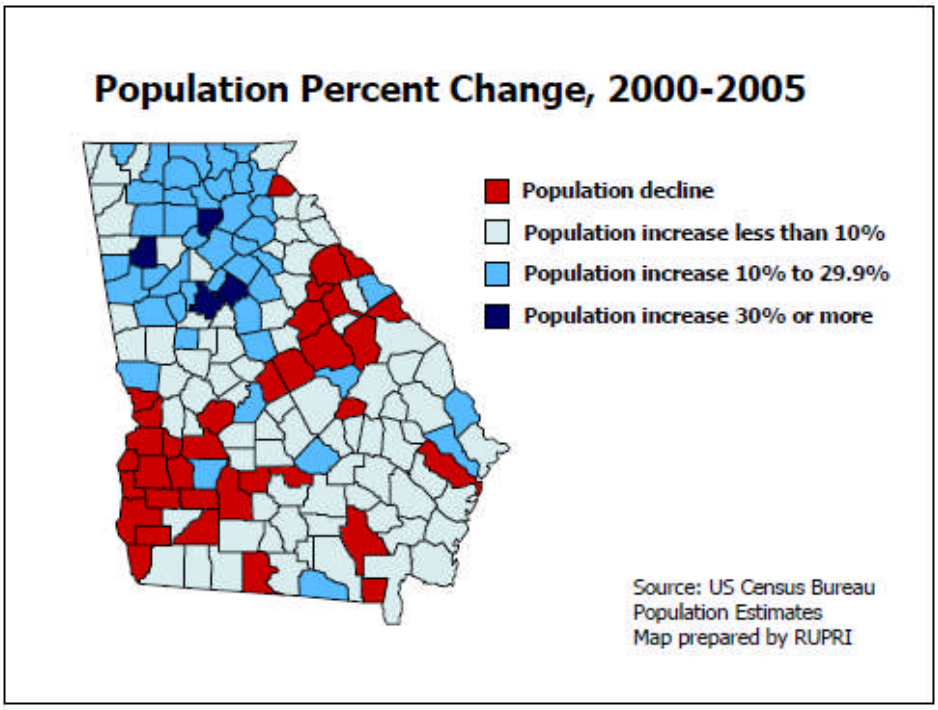

Figure 3.6 – Georgia Population Percent Change, 2000-2005

Much of the population that resides within these rural areas is also considered to be living at or below poverty level. See Figure 3.7. According to a recent study, "Georgia's rural areas experience a poverty rate that is 58% higher than urban rates" within the state.[22] The overall poverty rate of the state is also higher than the national

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[21] "Demographic and Economic Profile - Georgia." edited by Kathleen K. Miller, 1-17. Columbia, Missouri: Rural Policy Research Institute of the University of Missouri-Columbia,, 2006. pp. 2

[22] Critical, pp. 14

average which recently, “in Georgia in 2003 was 13.3 percent, compared to 12.5 percent for the U.S.”[23]

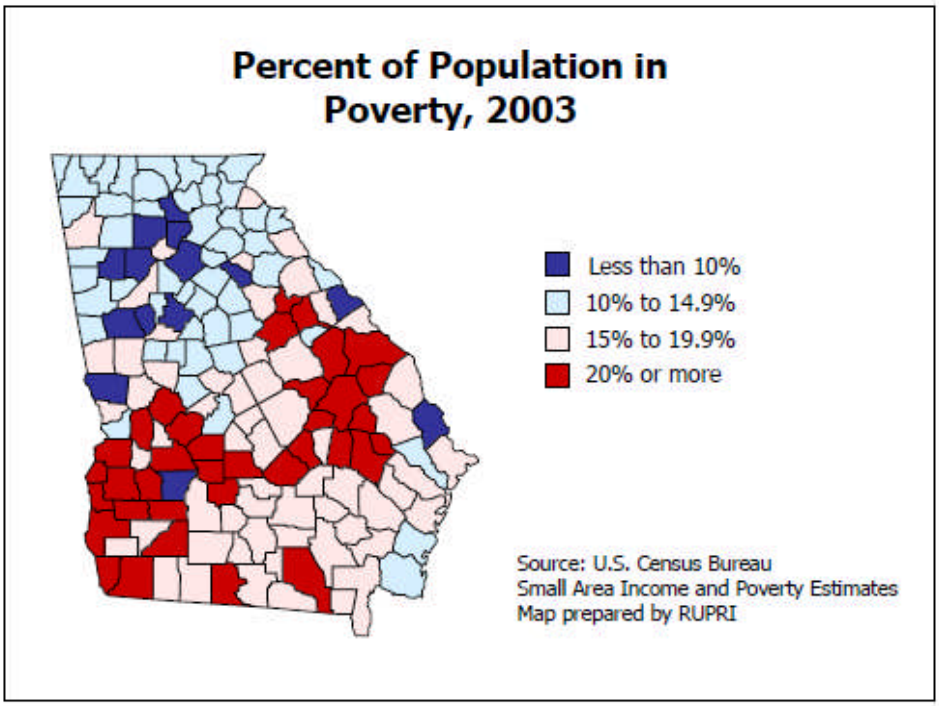

Figure 3.7 – Percent of Georgia Population in Poverty, 2003

Many of Georgia’s rural citizens “live in poor, isolated areas without adequate transportation or access to local healthcare providers. Many families live from day to day in inadequate homes… and [the] local government is unable to provide help because long-term poverty undermines the tax base.”[24] According to the U.S. Department of Agriculture Economic Research Service, state counties that have experienced poverty rates of 20 percent or higher in each census from 1970 through 2000 are classified as persistent poverty counties. In reviewing these statistics, “there

[23] "Demographic and Economic Profile – Georgia”, pp. 7

[24] Critical, pp. 14

are 386 persistent poverty counties in the U.S., and 50 are located in Georgia. The majority of the persistent poverty counties in Georgia (43 of 50) are nonmetro counties."[25] See Figure 3.8. Many experts feel that, "for the most part, areas of high poverty [like these] are of long standing, with conditions stemming from a complex of social and economic factors rather than from personal events"[26]

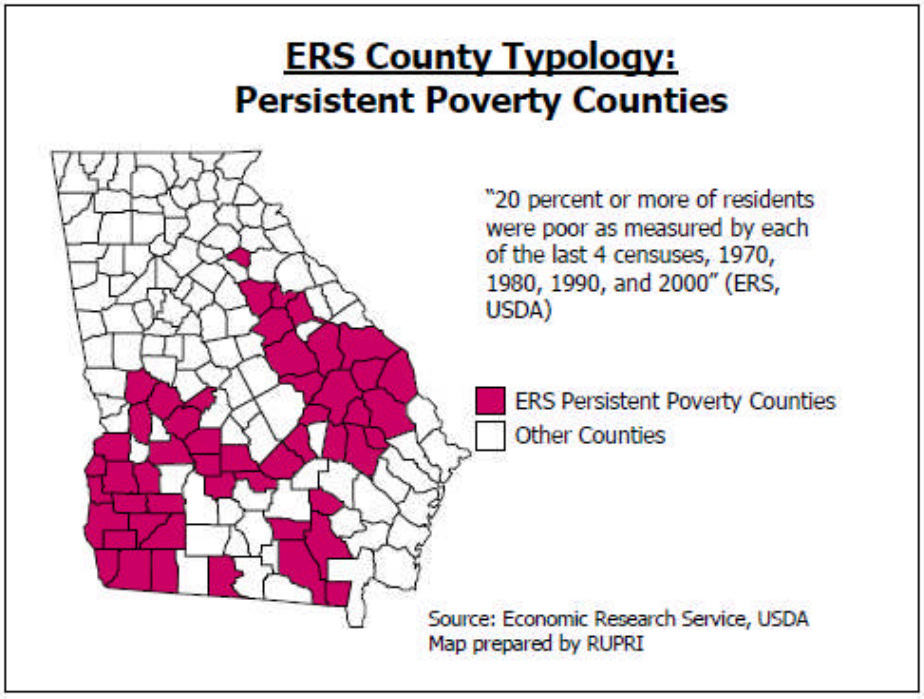

Figure 3.8 – Persistent Poverty Counties in Georgia

This translates into the disheartening fact that there is a tremendous need in these areas for access to care but that "large proportions of the individuals and families in Georgia's rural counties cannot afford adequate healthcare."[27]

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[25] "Demographic and Economic Profile - Georgia.", pp. 7

[26] Beale, Calvin L. "Anatomy of Nonmetro High-Poverty Areas Common in Plight, Distinctive in Nature." *Amber Waves* 2004, 20-27. pp. 22

[27] Critical, pp. 14

Patient Volume

Many rural healthcare facilities face, "difficulty maintaining sufficient inpatient occupancy and outpatient volume to cover costs."[28] They are typically plagued with underutilization which many times leads to their demise. This is illustrated by the information displayed in Table 3.1 which shows the occupancy rate for hospitals within the state of Georgia divided up by area type.

Table 3.1 – Georgia Hospital Usage by Area Type

Supply and Utilization of General Hospitals by Rural/Urban Areas, Georgia 1998

Rural/Urban Area	Number of Hospitals	Capacity Beds	Beds Per 1000 Population	Admissions	Patient Days	Occupancy Rate
Urban	72 (45.3 %)	16,891 (69.4 %)	3.4	575,293 (71.0 %)	2,876,643 (73.0 %)	46.5 %
Secondary Rural	15 (9.4 %)	2,737 (11.2 %)	3.8	107,800 (13.0 %)	485,339 (12.0 %)	48.3 %
Primary Rural	72 (45.3 %)	4,713 (19.4 %)	3.1	131,180 (16.0 %)	571,728 (15.0 %)	32.9 %
Total	159 (100.0 %)	24,341 (100.0 %)	3.3	814,273 (100.0 %)	3,933,710 (100.0 %)	44.1 %

Source: *Annual Hospital Questionnaire, Georgia Dept. of Community Health/Division of Health Planning, 1998* (As of 4/38/00)

Definitions: Urban = Inside Metropolitan Statistical Area (MSA); Secondary Rural = Outside MSA, county having population density greater than or equal to 100 per square mile; Primary Rural = Outside MSA, county having population density less than 100 per square mile

Similar evidence of this is partly shown by the study referenced in the previous section that was conducted by the U. S. Department of Health and Human Services. This study states that, "among both non-elderly and elderly people with ambulatory expenses, residents of rural counties had the fewest visits per year. This difference was especially

[28] Critical, pp. 5

prominent for the elderly, among whom rural residents had only half as many visits each year as metro residents (5.5 visits versus 10.9)."[29] See Figure 3.9. These rural residents also, "had the lowest average annual [healthcare] expenses: $662, compared with $1,432 or higher in the other areas."[30]

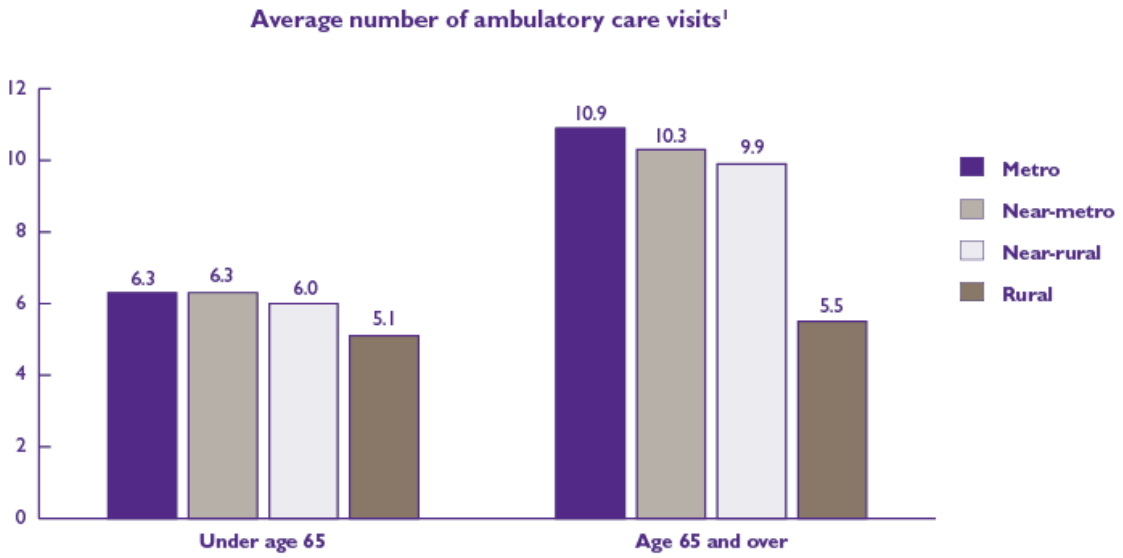

Figure 3.9 – Average Ambulatory Care Visits for the U.S.

According to another study done by U. S. Department of Health and Human Services in 2003, the elderly population in the U.S. contributes the greatest numbers to the overall use of healthcare services in our country.[31] See Figure 3.10. If the information contained in these two studies accurately depicts the situation that we find in rural America where the elderly population has its largest percentage of people, then this

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[29] Larson, pp. 3

[30] Larson, pp. 3

[31] Larson, pp. 1-48

is a large factor that contributes to the overall poorer financial performance and volume of patients seen at these hospitals. Many of these elderly residents tend not seek the amount of types of care that they truly need, only using the hospital for emergencies. The shortages that these hospitals face in terms of a lack of elderly usage of their facility, and in turn their lower yearly healthcare expenses, must take a large toll on their daily ability to operate successfully.

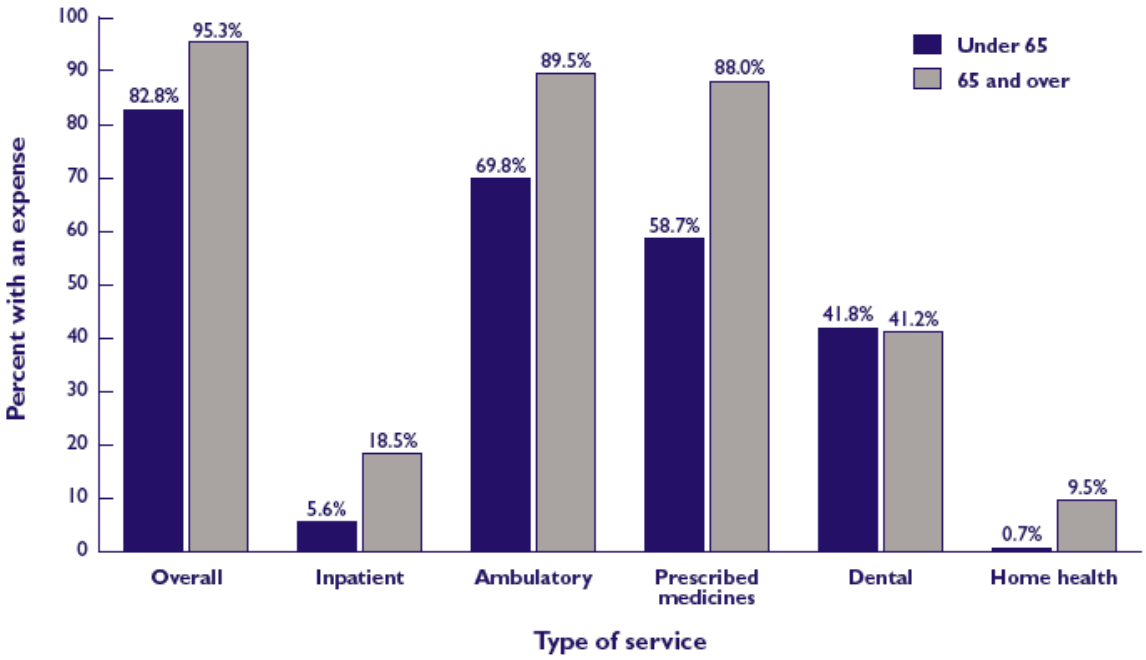

Figure 3.10 – Percent of Types of Healthcare Usage in the U.S. by Age

Another prominent issue that influences the daily use of these facilities is that currently a "large proportion of rural residents seek health care outside of their local health care system."[32] Much of this problem stems from the inability to convince people

[32] Critical, pp. 18

that the local hospital is the appropriate place for them to go for their typical healthcare needs. This is because a large part of, "the decision to get care locally or elsewhere is primarily driven by patients' perceptions in the quality of care or the availability of services."[33]

This transportation effort can be financially taxing on the affected families, but more importantly, this situation eliminates many of the valuable revenue opportunities that could be available to the local hospital. This trend also decreases the potential for other hospital associated revenue staying within the local economy. These weighty burdens, and in turn lower revenues due to lost clients, makes it much harder for these remote hospitals to afford the current and adequate facilities that they need on budgets that are much smaller and tighter than hospitals in larger and more affluent communities.

Staffing

Adequate staffing is a high priority for rural healthcare facilities because "although rural communities have an obvious need for a full spectrum of health services commensurate with those offered to urban communities, current reports indicate that these areas remain relatively underserved by the medical community."[34] Many of these facilities in the United States face "difficulty [when it comes to] recruiting and retaining medical and administrative staff."[35] Their remote locations, typically outdated and inadequate facilities, and lower overall economic levels within their respective communities, creates a situation which makes it much harder for these hospitals to attract the specialists that they need to help adequately care for their local constituents.

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[33] Stockmyer, Neal. "Financial Viability of Local Systems of Care." Georgia Health Policy Center. pp. 1

[34] Gursky, pp. 16

[35] Critical, pp. 5

Most of these rural areas "tend to have about half as many physicians per capita as urban areas, nearly 75 percent of rural counties have regions that are designated as medically underserved areas, and rural areas are nearly four times more likely to be designated Health Professional Shortage Areas (one primary care physician per at least 3,500 residents) than are metropolitan areas."[36] See Figure 3.11. Due to these numerous conditions, "many rural hospitals face shortages of physicians, nurses, and other health care professionals. If these professionals believe that a rural hospital's care is inferior, they may be less likely to practice there."[37] Some of the more, "savvy hospitals can make their rural setting a selling point by emphasizing the quality of life and advantages for raising a family," but this is not typically the norm.[38]

A very large problem facing many of these small towns is the ability to attract Primary Care providers. Many of these rural facilities have to combat recruitment and retention issues like:[39]

- Providers want to reside in or near a metropolitan area
- Providers feel isolated from the medical community
- There are fewer opportunities for on-call coverage and time off

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[36] Gursky, pp. 16

[37] Kemp, Kerry. "Quality Improvement in Rural Hospitals: How Networking Can Help." In *Networking for Rural Health*, 1-36: Academy for Health Services Research and Health Policy, 2002. pp. 6

[38] Serb, pp. 3

[39] Critical, pp. 28

- Rural physicians have to work longer hours to earn the same amount of money as their urban counterparts

- Rural facilities may be unable to pay competitive salaries and benefit packages to recruit administrative and support staff due to insufficient funds

- State-of-the-art equipment and technologies are often unavailable

- Patient referrals and transportation in emergency cases may be difficult

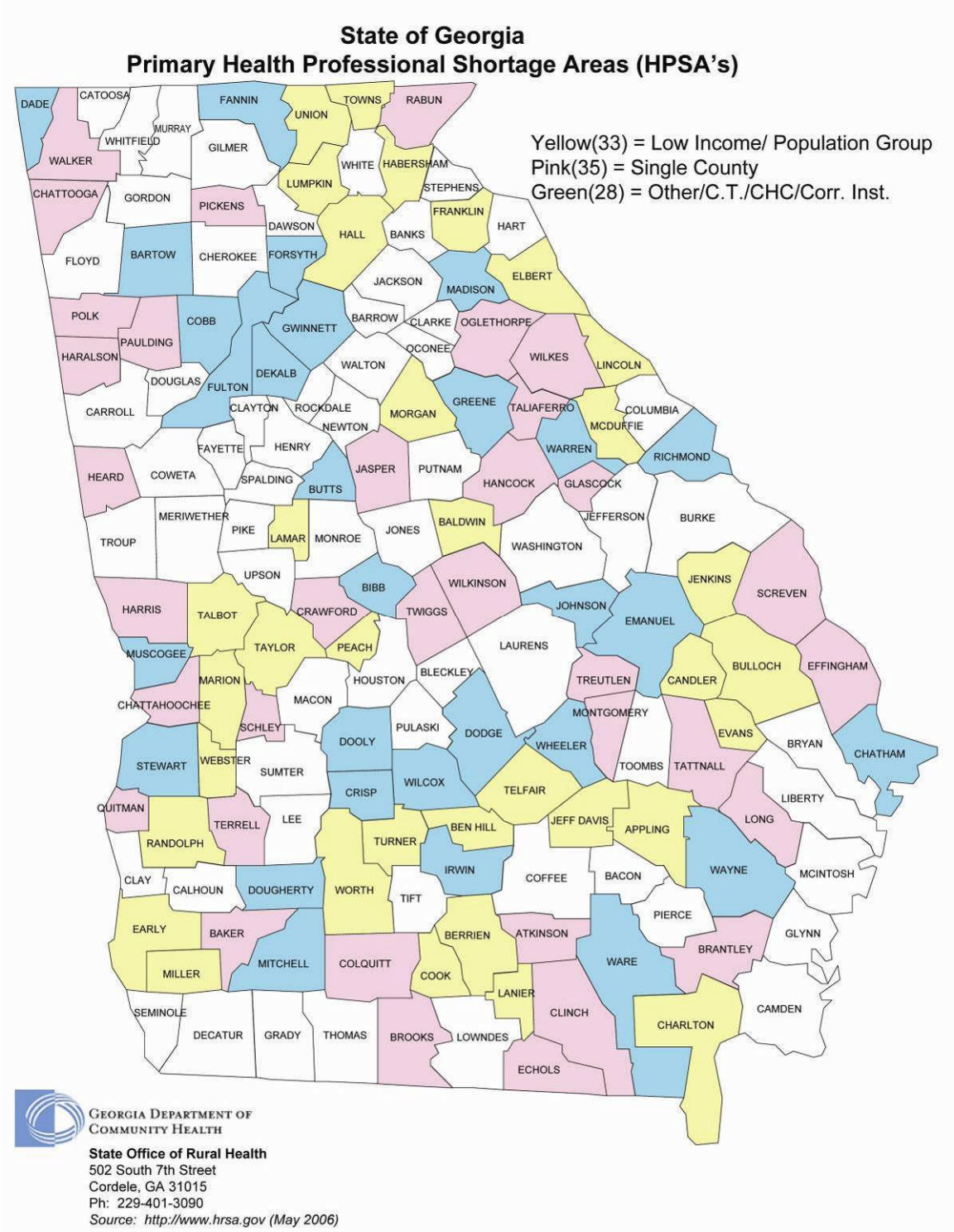

Figure 3.11 – Map of Georgia's Health Professional Shortage Areas

Capital Improvements

Within the rural healthcare system many of these small town organizations have trouble, "securing capital to renovate old physical structures and to replace new medical equipment, particularly routine medical equipment."[40] This is because "rural hospitals … have lower profit margins, which limits their abilities to attract investors, make improvements, and maintain stocks of supplies."[41] The truth is that the majority of rural hospitals, "experience extreme difficulty in accessing capital. This access issue makes it virtually impossible for many to make facility or equipment improvements, consequently, rural facilities are often less attractive to physicians. Grants from donations, private foundations and other local initiatives are not a reliable source, yet these remain the predominant mechanisms that many rural hospitals in Georgia [and throughout the U.S.] can obtain capital for purchases or improvements."[42] A 2003 study conducted at the University of Minnesota Rural Health Research Center found that, "capital investment in rural hospitals failed to prove profitable for investors, and therefore most investments are made in the form of charity. These charitable investments are not sustainable solutions, however, and are rarely sufficient for significantly improving medical services and maintaining supply reserves."[43]

These weighty burdens, teamed with a lower patient volume based on population, and in turn lower revenues largely due to lost clients, make it much harder for these remote hospitals to afford the current and adequate facilities that they need. These facilities function on budgets that are much smaller and tighter than hospitals in larger

[40] Critical, pp. 5

[41] Gursky, pp. 17

[42] Critical, pp. 20

[43] Gursky, pp. 17

and more affluent communities. This is a large issue for the hospital to deal with within these communities because "the physical condition of the hospital is important in shaping the patients' perceptions of the 'quality of care.'"[44]

An increase in general construction costs has not helped to relieve this situation either. Recently the demand for construction materials, and especially steel, due to a high demand in over-seas construction has a large part to do with this problem. This has led to an enormous price escalation and "for complex buildings such as hospitals, per-foot prices that were $330 per square foot in 2003 have gone up to $550 per square foot in January 2006."[45] This is an increase in cost of 66% over the last 3 years. It can be inferred from this information that the square footage costs extracted from the national database of recently completed community hospitals listed in Table 2.1 would actually be in the neighborhood of around $400 per square foot versus the stated cost of $240 per square foot. This is escalation makes quite a bit of difference to these facilities in terms of what they can actually afford to build.

Economies of Scale

With such small facilities combined with a limited patient base many of these rural facilities are faced with the inability to achieve economies of scale. The only way that any of the facilities can find a viable solution is by either "creating a rural health network or accessing an existing collaboration among rural hospitals … a rural health network is defined as 'a formal arrangement among rural health care providers (and possibly insurers, social service providers, and other entities) that uses the resources of

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[44] Critical, pp. 5

[45] Greene, Jan. "Climbing Construction Cost." *Hospital & Health Networks Magazine* 2006. pp. 1

more than one existing organization and specifies the objectives and methods by which various collaborative functions will be achieved.'"[46]

Medicare/Medicaid & Insurance

Within the United States, "over 55 million people, about one-fifth of America's population, live in rural areas served by about 2,000 rural community hospitals."[47] Unfortunately, this is also where 20 percent of uninsured Americans live today. Having health insurance, "is viewed as necessary to ensure that people have access to medical care and protection against the risk of costly and unforeseen medical events," but many people in our rural areas cannot afford this luxury.[48] These rural areas, "have fewer large employers who are willing and able to absorb some of the cost of health insurance for their employees."[49] Figure 3.12 shows the percentage of uninsured Americans related to the overall U.S. population from a study that was performed by the Agency for Healthcare Research and Quality in 2004.

Many of these rural areas also contain a high percentage of Medicare and Medicaid patients as well as indigent and charity patients, but few commercially insured patients. Those that do have insurance are spending "an increasing share of their income on health care. Health care spending in America has increased from 5 percent of GDP in 1960 to 16 percent in 2004, and is expected to increase to 18.7 percent in 2014."[50] All of these factors have contributed to people seeking less and less medical care for problems

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[46] Kemp, pp. 5

[47] *Section for Small or Rural Hospitals 2005 Annual Report*. 2005, American Hospital Association. p. 1

[48]Rhoades, Jeffrey A. "Statistical Brief #83." edited by Medical Expenditure Panel Survey, 1-6: Agency for Healthcare Research and Quality, 2005. pp. 1

[49] Gursky, pp. 18

[50] "Reforming Healthcare for the 21st Century." pp. 1

that they feel they can "live with" on a daily basis and only using the hospitals for emergencies.

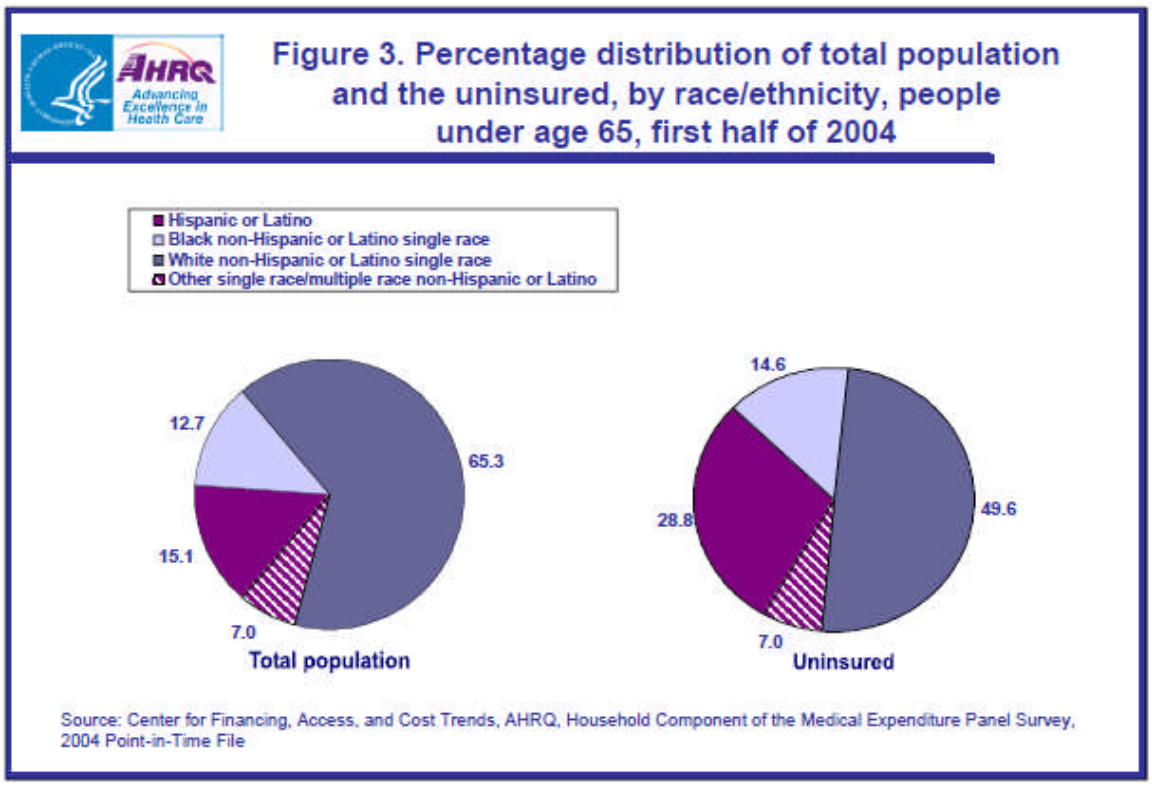

Figure 3.12 – Uninsured Americans related to Overall U.S. population

To add to the financial stress of the situation, "all of these hospitals rely on payments from the Medicaid and Medicare programs for revenue. Unfortunately, because of the ways in which costs are reported to federal programs, rates of Medicaid and Medicare reimbursement to rural hospitals and physicians are often dramatically lower than those to their urban counterparts for equivalent services."[51] Many of the recent problems within the rural healthcare community "can be traced to Medicare and other third party payment practices, including managed care … Changes in reimbursement

[51] Gursky, pp. 19

practices have [also] decreased significantly the length of stay in hospitals which has negatively impacted inpatient occupancy levels. This shift has resulted in more outpatient treatment for medical problems than were traditionally treated on an inpatient basis."[52]

The Balanced Budget Act of 1997, "created the federally assisted Medicare Rural Hospital Flexibility Program… [to improve the financial conditions in which rural hospitals operate but] by implementing a prospective payment system for outpatient services in hospitals, the act greatly constrained the ability of rural hospitals to generate revenue from outpatient services and, therefore, negatively impacted the hospitals' ability to financially support other services, including inpatient care."[53]

Financial Viability

Financial Viability is one of the major issues that hospitals in rural communities face every day. Most of these "small rural hospitals are having a particularly difficult time surviving as shown by the current hospital closure trend in the state [of Georgia}."[54] A large part of this issue is due to the fact that "the amount of health care dollars spent receiving care from the local hospital, physicians, and other providers of care not only effects the viability of the healthcare system but also the community as a whole. A strong local health care system is important to the economic development of the community."[55] This cycling of funds is not happening because, "Georgia's rural economy continues to be in jeopardy due to the lack of corporate or industrial businesses. Inadequate health care resources and the lack of a healthy workforce are further barriers to attracting

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[52] Critical, pp. 6

[53] Gursky, pp. 19

[54] Critical, pp. 17

[55] Stockmyer, pp. 1

industry to the area."[56] This lack of industry means that there are less opportunities for the residents to gain the benefits of healthcare insurance which would allow them to utilize the local healthcare system more. There is a sign of improvement in the situation, though, in that over the last few years, "an increasing number of urban residents have opted to move out of metropolitan areas to rural communities, [but] the rural health care system has [still] not seen the financial and strategic investments necessary to sustain its viability" even with the addition of these people. [57]

There are several other related factors that affect the economic viability and consumer access in rural health markets beyond those listed above, including:[58]

- overall economic conditions in a community
- the change in population and the pressure it places on existing resources
- ethnic and racial differences within a community that may pose cultural or language problems for accessing health services
- the income levels of the community as it impacts ability to pay for services or provide subsidies for rural health care infrastructure
- the distance to competitive health service providers (both urban and rural)
- the structure of the provider institutions (private, public, etc)
- the extent of the provider network in a given community and the range of services available there
- State and federal policies as they apply to questions of rural providers and citizen access.

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[56] Critical, pp. 16

[57] Gursky, pp. 17

[58] Fawson, Christopher, and Roberta Herzberg. "Federal Lands and Health Care Markets in the Rural West." 1-112. Logan, Utah: Utah State University, 2006. pp. 4

All of these factors can greatly affect the ability of the systems of care within a community to function in an efficient and cost affective way.

A common situation that we have found is that "in many rural counties the hospital is the primary economic engine," making its status very important to the community. It has to function adequately and efficiently so that it can remain in business to serve the people. Unfortunately, a number of rural hospitals are at risk for closure, which has recently become a common occurrence within Georgia as mentioned above. Of the hospitals that have closed in the state over the last 20 years, 43% have been in rural communities (16 out of 37) and based on the 1998 Hospital Indigent Care Survey, 62 general hospitals within the state typically experience financial losses. Some factors that "generally raise a hospital's risk of closure include: smaller hospital size, lower inpatient occupancy rates, lower Medicare days, higher Medicaid days, higher area wages, and more local competition. Factors that lower the risk of closure are public ownership, higher Medicare case mix, and higher local per capita income."[59]

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[59] Critical, pp. 42

Rural Healthcare Priorities

According to a 2004 study done by the School of Rural Public Health at the Texas A&M University System Health Science Center, the following rural health issues were identified as priorities based on survey responses from over 1000 rural health stakeholders:

Table 3.2 – Rural Health Focus Areas Study Summary

Rank	*Healthy People 2010* Focus Areas	Percentage Nominating[a]
1	Access to quality health services	73
2	Heart disease and stroke	41
3	Diabetes	40
4	Mental health and mental disorders	37
5	Oral health	35
6	Tobacco use	26
7	Substance abuse	25
8	Education and community-based programs	25
9	Maternal, infant, and child health	24
10	Nutrition and overweight	22
11	Cancer	22
12	Public health infrastructure	21
13	Immunizations and infectious diseases	17
14	Injury and violence prevention	16

[a] The percentages reported are the average of the percentages of 4 groups of respondents—(1) state offices, (2) rural public health agencies, (3) rural health clinics and community health centers, and (4) rural hospitals—who chose each focus area as one of their top 5 priorities.

Table 3.3 shows a further breakdown of the numbers included in the above study by organization and by region.

Table 3.3 – Rural Health Focus Areas Study Breakdown

Avg. Pct.	Percents of Organizations Choosing[a] State Orgs	Pub H. Units	Centers Clinics	Rural Hosp	Rank of H P2010 Focus Areas†	Priority Rankings by Organization State Orgs	Public H. Units	Centers Clinics	Rural Hosp
73	**90**	66	68	68	1 *** Access to Qua lity Health Services	1	1	1	1
41	26	37	**43**	**59**	2*** Heart Disease & Stroke	7	3	4	2
40	35	21	**52**	**52**	3*** Diabetes	4	12	2	3
37	**51**	21	**47**	30	4 *** Mental Health & Mental Disorders	3	12	3	5
35	**54**	32	**39**	14	5*** OralHealth	2	4	5	14
26	17	**39**	24	25	6** Tobacco Use	11	2	8	7
25	21	31	25	25	6 Substance Abuse	10	5	7	7
25	30	19	20	30	6 Educational & Community-Based Programs	5	10	15	5
24	22	28	24	22	6 Maternal, Infant, & Child Health	9	7	8	9
22	14	**28**	**31**	16	10*** Nutrition& Ove rweight	12	7	6	13
22	12	24	19	**31**	10** Cancer	14	11	11	4
21	**29**	**27**	12	17	12*** PublicHealthInfrastructure	6	9	14	11
17	10	**27**	15	17	1 3** Immunization & Infectious Diseases	15	9	13	11
16	**23**	17	10	13	14* Injury& Violence Preve ntion	8	16	15	15
13	9	**20**	**17**	6	15** FamilyPlanning	16	14	12	18
13	13	**29**	6	3	15*** Environmental Health	13	6	19	22
Avg. Pct.	Percents within Regions Choosing North-east	Mid-west	South	West	Rank of HP2010 Focus Areas†	Priority Rankings by Region North-east	Mid-west	South	West
73	67	69	74	77	1 Access to Qua lity Health Services	1	1	1	1
41	33	**52**	**48**	26	2*** Heart Disease & Stroke	7	2	3	8
40	37	38	50	37	3 Diabetes	5	3	2	4
37	**42**	35	32	**48**	4* Mental Health & Mental Disorders	3	4	5	2
35	40	32	36	39	5 Oral Health	4	5	4	3
26	**43**	**31**	25	17	6*** Tobacco Use	2	6	8	13
25	**35**	22	16	**33**	7 ** Substance Abuse	6	10	12	5
25	18	20	24	32	7 Educational & Community-Based Programs	11	11	9	6
24	22	19	23	30	9 Maternal, Infa nt, & Child Health	10	12	10	7
22	**30**	**29**	26	15	10* Nutrition&Overweight				14
22	12	**28**	**29**	9	10*** Cancer	15	8	6	16
21	18	24	17	20	12 Public Health Infrastructure	11	9	11	10
17	18	12	16	21	13 Immunization&Infectious Diseases	11	16	12	9
16	**24**	14	6	**20**	1 4*** Injury & Violence Prevention	9	14	20	10
13	13	11	12	19	15 FamilyPlanning	14	17	14	12
13	10	14	10	13	15 Environmental Health	16	14	14	15

(a) Bold percentages identify priority areas that were significantly more likely to be chosen by some groups than by others.

For this study, "the team surveyed over 1000 local, state, and national rural health officials and other organizations interested in rural health to identify rural health priorities and Models for Practice."[60] We can see from these figures that 9 out of the top 14 issues in these rural areas are not specifically healthcare issues. Many are societal issues that involve the way people live day to day. This is an interesting statistic because it means that through education and intervention hopefully we can have an impact on the situation.

These issues can vary by region within the U.S. but they are typically similar throughout all rural areas. We can see in Table 3.4 how most of these same 14 categories from the study above are listed among the top ten major causes of death within the State of Georgia.

Table 3.4 – Top 10 Major Causes of Death Among Georgians

Cause of death	Rate/per 100,000 Population
Heart Disease	135.5
Cerebrovascular Disease/Stroke	57.1
Lung, Tracheas, Bronchus Cancer	54.9
Infectious and Parasitic Disease	38.4
Breast Cancer	27.9
Motor Vehicle Accidents	21.7
Diabetes Mellitus	17.0
Hypertensive Disease	16.8
Suicides	11.6
Homicides	10.3

Source: *Georgia Vital Statistics Report, 1995*

[60] "Southwest Rural Health Research Center." Texas A&M University System Health Science Center, http://srph.tamhsc.edu/centers/SRHRC/default.htm. [cited 2007 January 28]

There can be additional variations among issues within communities, though, as to how important they become, and are dealt with by the community. An example of this variation is that within the State of Georgia there is one large and troubling health issue facing rural communities, teen pregnancy. Studies show that "the average teen birth rate in urban counties is 36.5 as compared to 53.7 in Georgia's rural counties. This represents a 68% higher rural teen birth rate."[61] This is a problem that is more within a way of life than it can be considered a health issue, but if this trend continues, there must be adequate care provided for the children that are being born into these communities.

From the information contained within the above section, it is clear that rural communities have a completely different set of focus areas and priorities when it comes to their healthcare than do people in urban environments. They have to battle on a daily basis:

- Public access to quality healthcare

- Social issues such as substance abuse, teen pregnancy, and acts of violence that affect the overall health of the community and which people continually choose to ignore

- Chronic diseases that if left untreated could become fatal

Any changes that are made to the overall healthcare delivery system within these small rural communities may have the ability to positively affect all of these items listed.

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[61] Critical, pp. 14

PART TWO: RESOLUTION STRATEGIES

SUMMARY

- Rural hospitals need to find new ways of community integration to help improve the overall health of these rural areas. One way to achieve this is by replanting itself directly into the most populated area, the middle of the downtown sector. From here these facilities can help to foster the revitalization of these urban cores which in many cases have become blighted areas.

- Rural hospitals have to find new ways to help supplement their underperforming facilities and improve their overall financial situation. They can do this by incorporating a broader program with different types of spaces into their facility. The facility could gain help with the construction costs if they incorporate community spaces.

- Rural hospitals have to offer an appropriate scope of services to the community so that they do not over extend their scarce budgets into additional unprofitable areas.

- Rural hospitals need to improve the quality of care that they are able to provide to their constituents which can be achieved through the design of their facilities.

CHAPTER 4

URBAN PLANNING FOR THE COMMUNITY

There is a lot of discussion in society today concerning Urban planning, Urban design, Urban renewal, and Urban infill. Much of this dialog debates how these different efforts can help society to resurrect our dying and decaying American cities. The creation and implementation of these ideas were, and still are, paramount to the survival of our cities. This, however, is not the only growing problem within our country today. A fissure lies, not predominantly in these decaying inner city areas, but in the suburban and rural realms that reside outside of the city periphery. This situation is due to the fact that "a charter for the reconstruction of the city is the necessary complement to a charter for the reconstruction of the countryside… [and] they must transcend the limited interests of … [the involved areas influential] groups" [62] The problem with this statement is that the charters for our cities are working and evolving into better versions every day, but we do not have an accurate or feasible charter for the countryside that is working well or even at all.

To compound this problem, the re-urbanization movements of nearby cities are attracting businesses back into the city center that once moved to more remote areas to escape the major problems associated with cities. This relocation back into cities is largely due to the overdevelopment of land and underdevelopment of roads which are affecting traffic conditions in most of these suburban and rural areas. Residents as well are moving back into cities for these same reasons. This is revitalizing our urban cores

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[62] Krier, Leon. *Leon Krier: Architecture and Urban Design: 1967-1992*. Edited by Richard Economakis. London: Academy Editions, 1992. pp. 15

but is leaving, in its wake, even more deserted compounds within the suburban and rural landscapes.

These remote areas are also the locations where green-field (naturally undisturbed) sites are being destroyed every day to make way for more new developments as "the American landscape is being sacrificed to building."[63] This endless cycle of occupation, abandonment, and migration appears to be a natural trait within the people of our time. The common consensus is that we have so much land available to us that we should just abandon buildings and build new facilities somewhere else that fit our current needs more adequately. All this is being done without any consideration of what will happen to these lands and empty structures in the future. Leon Krier states "the global destruction of cities and countryside, of human cultures and of nature itself, can only be reversed by a global philosophical, technical, cultural, moral and economic project: by an ecological project."[64]

Society has to take a stand and become part of this project. It has to become bold like Krier who proclaims that "no longer can short-term budgets dictate the form of architecture and the city, but architecture and the city must shape the form of long term budgets." [65](Krier, pp.20) We have to understand that a successful project, "can only be built and maintained when it represents the goal of individuals, of a society, and its institutions." [66](Krier, pp.17) This is considered Quality Growth which is a relatively

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[63] Clark, W. G. "Replacement." *Modulus 20* 1991, 2-5. pp.

[64] "New Urbanism." http://www.newurbanism.org/. [cited 2006 October 14]

[65] Krier, pp. 20

[66] Krier, pp. 17

new trend in society that is "about moving forward as a community in a deliberate, thoughtful, and holistic effort to make better places for everyone."[67]

It is the architect's job to be an environmental thinker within society and to address and influence these issues in any positive way possible. Designers have to convince their clients that these ideas are worth considering for the betterment of society overall. These individuals can only do so much, so it is also up to us as a society to open our minds on this topic and provide new ideas and solutions to help overcome this ever-growing problem.

Alternative Measures

These current trends and issues, brought to light here, are the main reasons why these rural areas are the regions within our environment where considerable efforts need to be focused on Smart Growth, sustainable design, and adaptive re-use. People need to be reminded of their social responsibilities within their respective communities. They need to be urged to foster growth in a thoughtful and reserved manner. We also have to challenge ourselves, as architects, to think outside the box about how we can nurture growth more in this vain than in the current development styles.

Smart Growth

The problem with our society today is that what we consider as our normal "current form of growth is unsustainable: a continuous outward expansion of development and the ever-increasing need for more transportation capacity, despite the fact that regional population and employment are fairly stable. These trends threaten both the quality of life… and the quality of the environment, as green space continues to

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[67] "Center for Quality Growth & Regional Development." Georgia Institute of Technology, http://www.cqgrd.gatech.edu. [cited 2006 September 24]

vanish while air quality and other environmental problems persist."[68] We must learn to manage growth, reduce traffic, and create sustainable environments that are versatile enough to last us for many years to come. We must also find ways to "revise relationships between interconnectivity, parking, mixed-use density, and public transportation [that] are needed to produce more health-supportive environments."[69]

The main societal movement leading the way in this regard is called Smart Growth. Lying in opposition to it is a major adversary named Sprawl. Sprawl is defined as "development that is dispersed, auto-dependent, single use, and impossible to walk to [for] your daily needs. It is usually located along highways and in rural areas outside urban and village centers."[70] According to most experts "the root cause of U.S sprawl is… the technological superiority of the automobile… As important as prior transportation innovations have been, the car has had a more dramatic effect on the city than anything before it. Unlike the earlier transportation innovations, the car has radically reshaped cities because it eliminates walking almost entirely."[71]

Smart growth initiatives try to combat this as they typically "identify the relationship between development patterns and quality of life by implementing new policies and practices promoting better housing, transportation, economic development and preservation of environmental quality."[72] The types of practices help to "support national environmental goals by preserving open spaces and parkland and protecting

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[68] "New Urbanism"

[69] Gamble, Michael, and Jude LeBlanc. "Incremental Urbanism: New Models for Redesign of America's Commercial Strips." *Harvard Design Magazine* 2004, 51-57. pp. 51

[70] "New Urbanism"

[71] Glaeser, Edward L., and Matthew E. Kahn. "Sprawl and Urban Growth." 1-75. Cambridge, Massachusetts: Harvard Institute of Economic Research, 2003. pp. 3

[72] "New Urbanism"

critical habitat; improving transportation choices, including walking, bicycling, and transit, which reduces emissions from automobiles; promoting brown field redevelopment; and reducing impervious cover, which improves water quality."[73]

The Environmental Protection Agency has now gotten involved with Smart Growth movements and has even come up with a 10 part list of Smart Growth guidelines. They are as follows:[74]

1. Mix land uses
2. Take advantage of compact building design
3. Create housing opportunities and choices for a range of household types, family size and incomes
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty, and critical environmental areas
7. Reinvest in and strengthen existing communities & achieve more balanced regional development
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair and cost-effective
10. Encourage citizen and stakeholder participation in development decisions

The Hospital's Role in Community Development

In the context of community development "it is the job of the community leaders to persuade potential tourists, residents, and outside businesses that your town is unique--

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[73] "New Urbanism"

[74] "New Urbanism"

or has a differential advantage--in a way that could be important to them in their decision of where to visit or where to locate."[75] This same technique can be applied to a local hospital within a community as well. They have to convince the people that their facility is an integral part of the community and that they are taking measures to adequately care for and support their town and constituents.

A large problem that these facilities have to combat is that "often, those who live and work in the community lose sight of their community's uniqueness or they take it for granted."[76] This is especially true for the local hospitals in these small towns and what they are able to offer as benefits to the community. Some of this oversight could be contributed to the fact that many of these facilities are not located directly in town so their presence is not necessarily felt on a daily basis.

Relationship to the Town Center

The interaction between the hospital and the surrounding community is an important factor that needs much careful consideration when planning one of these facilities. The current scenario that we encounter in many of these small towns is that when most of the older, original hospitals are replaced with new facilities, they are relocated to green-field out-parcels usually located at the edge of town or outside of town on local highways that lead away from the city center. The land in these locations is cheaper and plentiful enough to allow for the expanded size of the new hospital, but this move considerably reduces the accessibility of the facility while reducing the possibility for any direct social interaction between the hospital and the town. These decisions also

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[75] Western Rural Development Center. "Marketing the Uniqueness of Small Towns." Oregon State University, http://web1.msue.msu.edu/imp/modtd/33529767.html. pp. 1

[76] Western Rural Development Center, pp. 2

dismiss the efforts being made in society to promote land conservation, adaptive re-use, and sustainable design due to the everyday depletion of our land and natural resources.

These facilities actually have the opportunity to conserve land and natural resources by rebuilding on an existing in town site, relocating closer into town, or even by re-integrating themselves directly into the local context as part of the town square. If this plan of action is taken when redeveloping a facility, then a large question that these hospitals need to answer is how the facility could engage the surrounding context of the town to foster a heightened sense of harmony within the environment. We also need to look at how principals can be adapted from other types of commercial developments to create more walk-able, accessible institutions that could help to revitalize the immediate downtown areas that surround the hospital.

The following is a list of potential benefits to moving a facility to an in-town versus out of town site as proposed by this thesis:

- Conserves land and natural resources by re-using an existing site
- Helps control new phenomenon called Rural Sprawl
- Existing Infrastructure (roads, utilities, etc.) - lowers construction costs
- Locates services closer to populated area
- Provides pedestrian access to facilities
- Promotes physical activity/walkability
- Revitalizes urban core by increasing public traffic near local businesses
- Provides additional lease space for new local businesses
- Spark renovation efforts in surrounding area
- Physicians & hospital associated businesses could lease new spaces or empty space in existing surrounding buildings
- Allows for daily community use of features and spaces associated with facility

- Builds social capital of town
- Reinvests hospital as an integral part of the town and local economy
- Joint facilities w/ community could help hospital share the construction costs with the town - a better, more adequate building could be built
- Shared services & ownership w/ community could cut down on operating costs for hospital

We always have to look at both sides of an issue when consulting people in what choices to make for their communities. In opposition to the above list, the following is a list of potential problems to consider when proposing a relocation of a facility to an in-town versus out of town site as proposed by this thesis:

- More expensive land
- Restricted or constrained site size
- Restricted or constrained facility size
- Services offered (size implications)
- Working within block structure of the town
- Less natural open or green space
- Will require a more expensive multi-story building (structure & vertical circulation)
- Departmental adjacencies are more difficult to achieve with multi-story design
- Height restrictions
- Noise - will create additional noise for neighbors
- Lack of visibility form a main circulation route
- Access- Vehicular
- Access – Ambulance

- Providing adequate on-site parking
- Built context constrains location of service areas (deliveries, trash, etc.)

Accessibility

In relation to healthcare, the term accessibility is an extremely important issue that involves "the location of the facility near the population it serves, the ability of the facility to offer several payment structures, operating hours, the degree to which a facility can handle walk-ins, and the extent to which the population perceives these aspects of accessibility as convenient."[77] Within these smaller rural communities this ability to readily access the facility by foot could greatly increase its use because "the frequently limited or absent public transportation infrastructure in rural communities impedes general population mobility as well as travel to reach a hospital or a physician for routine or urgent care"[78] This is a major advantage to having the hospital placed in a centralized and publicly accessible location.

Walkability

As the leader in changing the healthcare focus of the local community from one of simply responding to and treating conditions to one that promotes and practices preventative health care, the local hospital has the opportunity to join in our nation's fight against "excess weight, diabetes, and other problems associated with too little activity [that] have become rampant in the past 30 years."[79] A major factor "contributing to the worldwide obesity epidemic is a lack of natural exercise—i.e., walking—which has been exacerbated as populations spread out from city centers… Studies by the Federal

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[77] Critical, pp. 18

[78] Gursky, pp. 17

[79] "Growing Focus on Health Should Aid New Urbanism." *New Urban News* 2003. pp.1

Highway Administration show that Americans make fewer than 6% of daily trips on foot."[80]

This movement towards more active lifestyles can be achieved through careful planning and adoption of certain New Urbanist design principles such as 'walkability'. This is a theory "premised on the idea that people will frequently make a five-minute walk from their homes to parks, shops, cafés, and other gathering places,"[81] that is prevalent in most New Urbanist developments and widely integrated in the planning and design of cities. This is a much needed requirement for communities that hospitals should work to incorporate into their facilities.

Many organizations, such as the Robert Wood Johnson Foundation, have made increased physical activity one of their key goals and are now giving out grants to, "launch a comprehensive attach on Americans' sedentary habits and on the ways in which physical activity has been 'engineered out of daily life.'"[82] One community that is already putting this effort into place is Stapleton in Denver who "is working to market health; they're working with physicians and the University of Colorado Health Center" to come up with solutions to these problems.[83]

Sustainable Design

There is one main question to be asked if we feel that we are unable to control our growth and have to continue with this endless cycle of tearing down and rebuilding new facilities. That question is, shouldn't design professionals be trying to design buildings that can easily be adapted in the future for expansion or into uses other than the original,

[80] "New Urbanism"

[81] "Growing Focus on Health Should Aid New Urbanism." pp.1

[82] "Growing Focus on Health Should Aid New Urbanism." pp.1

[83] "Growing Focus on Health Should Aid New Urbanism." pp.2

regardless of budgets? As advocates of society itself, shouldn't they be recommending these types of facilities to clients and demonstrating to them the value of thinking and building in this way.

The technical term for this method of approaching design is sustainable design. The term sustainability is explained as "an attempt to provide the best outcomes for the human and natural environments both now and into the indefinite future."[84] In other words it means the ability to meet present day needs without having to compromise those of future generations. The essential aim of sustainable design "is to produce places, products and services in a way that reduces use of non-renewable resources, minimizes environmental impact, and relates people with the natural environment."[85] Some of the common principles of Sustainable Design are listed as follows:[86]

- Low-impact materials: choose non-toxic, sustainably-produced or recycled materials which require little energy to process
- Energy efficiency: use manufacturing processes and produce products which require less energy
- Quality and durability: longer-lasting and better-functioning products will have to be replaced less frequently, reducing the impacts of producing replacements
- Design for reuse and recycling: Products, processes, and systems should be designed for performance in a commercial "afterlife".
- Biomimicry: redesigning industrial systems on biological lines ... enabling the constant reuse of materials in continuous closed cycles.

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[84] "Sustainable Design." http://en.wikipedia.org/wiki/Sustainable_design. [cited 2007 March 19]

[85] "Sustainable Design"

[86] "Sustainable Design"

- Service substitution: shifting the mode of consumption from personal ownership of products to provision of services which provide similar functions, e.g. from a private automobile to a car-sharing service. Such a system promotes minimal resource use per unit of consumption (e.g., per trip driven).
- Standardization and modularity: standard, modular parts allow products to be repaired rather than replaced and promote interoperability so that systems can be upgraded incrementally rather than wholly scrapped and replaced.

This aspect of current development trends and waste can certainly be seen as some of the major problems within our cities today. If we can successfully promote this new type of vision towards future development efforts, then we can possibly prevent an over abundance of buildings that have to be torn down and then rebuilt, or fields of empty underutilized buildings covering our landscape in the very near future.

Healthcare Construction

In healthcare design and construction, hospitals have to keep building, growing, and expanding due to changes in society, market influences, and ever-changing technology. These facilities also have to withstand the test of time because they are not replaced or fully rebuilt as often as many other building types. To accomplish these tasks, designers should be studying hospitals to figure out how to accommodate their current and future needs with as little environmental impact as possible. This fits in perfectly with some of the main goals of sustainable design.

The use of quality, durable, long lasting materials is a must for facilities like these because they need to stand the test of time. Due to this fact, things need to be standardized and made modular for easy replacement when and if it is needed to upkeep the facility. All of these materials then need to be reused or recycled, and this process is made easier if initially they are constructed with low-impact, environmentally friendly

materials. Systems within these structures also need to be designed for high efficiency and low environmental impact. Hospitals are a place where people come to heal or maintain their health. How can one of these facilities justify infecting the environment with pollution and waste if they are suppose to be helping to maintain it? Their local population is an integral part of this environment that we are referring to and they are supposed to be keeping them healthy and safe.

In order to promote this type of environmental thinking within society, healthcare entities have to be convinced that they should design and build for the future through the addition of multiple stories or additions added onto lower story buildings. They cannot keep purchasing more land and expanding outward with limitless bounds. Buildings should initially be designed with the utilities and structure capable of handling this additional load in the beginning of the first phase of the project to reduce future construction costs and materials needs. This can also reduce future facility downtime during periods of renovation and construction.

The hardest part of this recommendation is figuring out how much these facilities can afford to build now in order to save them time and money later. The type of construction selected can have a large impact on these decisions also. As an example, a poured in place concrete structure can be designed for future expansion vertically and horizontally, but the construction cost is a lot higher than other types of construction and there is a lot of preparation time in order to begin the future construction.

Steel construction on the other hand is more flexible because it has more modular construction characteristics. It can originally be designed as if it was a larger structure and the pieces would just be left off for the initial construction. In the future, these additional pieces can just be brought in at a later date and connected on with little or no modification or preparation needed. Steel construction is also much cheaper and faster to erect than poured in place concrete structures.

Adaptive Re-use

There is another option which is available to us that we can take advantage of today. As consultants and advocates for society, we are learning every day that many factors affect the perceived usefulness of the built environment. It is within these lessons that we may individually find ways to help society as a whole. The practice of adaptive re-use may be one of the most obvious ways that we have before us to preserve our undisturbed landscapes. Too often we have commercial developers who come in, purchase a site, and then wipe out everything that exists so that they can rebuild something that is very similar. These acts increase the strain on our landfills which eventually effects the environment.

With the process of Adaptive Re-use, "when the original use of a structure changes or is no longer required, as with older buildings from the industrial revolution, architects have the opportunity to change the primary function of the structure, while often retaining some of the existing architectural details that make the building unique… Adaptive reuse, along with brownfield reclamation, is seen by many as a key factor in land conservation and reducing the amount of sprawl."[87] In terms of its role within the Smart Growth concept that we mentioned previously, "it is more efficient and environmentally responsible to redevelop older buildings closer to urban cores than it is to build new construction on faraway greenfield sites."[88]

A Facelift for Adjacent Buildings

For healthcare providers there are many opportunities within these small town environments for the re-use of existing structures. Typically within these small towns

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[87] "Adaptive Reuse." http://en.wikipedia.org/wiki/Adaptive_reuse. [cited 2007 March 21]

[88] "Adaptive Reuse"

there are many empty suites and apartments in the two or three story older buildings that reside within the existing block structure of the area. By locating the hospital on an in-town site, many of the existing adjacent buildings have just become prime rentable tenant spaces. They are perfect locations for physician and other specialty offices as well as new retail and food service establishments to support the new hospital. This new market need can influence the preservation and renovation of many of these older surrounding buildings also, helping to revitalize the image of the society that lives there.

Big Box Stores and the Small Town

Many people in these smaller towns fear the large chain stores like Wal-Mart typically because of their expansion practices. They come into town, put everyone local out of business, and then leave town to build a super-center nearby on a main highway. These abandoned buildings are then left empty and decaying, becoming an eyesore to the community and a burden on the town.

These facilities do not have to remain this way and actually have many uses that the hospital can take advantage of to help revitalize the town. These facilities all have tall, uninterrupted structures with a regular rhythm. These can easily be turned a multitude of different building types because finished ceiling heights are no longer an obstacle, and the floor plan can is open enough to allow for almost any arrangement possible. For healthcare this is a great advantage because typically these are some of the issues that plague renovation and addition projects, especially when they are trying to accommodate new technologies.

These buildings can easily be turned into fitness centers for the local community, offering spa treatments, workout equipment, indoor pools, and even possibly an indoor running track. These buildings also work well for physical therapy units which have similar requirements to fitness facilities. These services could be moved out of the hospital to allow for room within the existing hospital for departmental expansion or for

new departments that the hospital feels are needed in the community. These buildings can also easily be turned into community health centers allowing for large community meeting areas for support groups, classroom settings for health education and prevention, child care areas, and activity areas for children and adults.

The possibilities within a society for reuse of existing buildings are endless and are only held back by the lack of imagination and drive of a community to make itself better. In being the instigator of many of these efforts, the hospital can take the lead in promoting revitalization of the community, promoting community health, as well as responding to physical health needs of its people. We all can make a difference in our environments, all we have to do is make a conscious effort, and one by one it will happen.

CHAPTER 5

FACILITY PLANNING

The people who live within the rural areas of our country "face a unique combination of factors that create disparities in health care not found in urban areas. Economic factors, cultural and social differences, educational shortcomings… and the sheer isolation of living in remote rural areas all conspire to impede rural Americans in their struggle to lead a normal, healthy life."[89] To respond to these significant differences, the rural hospital in America has an opportunity to help fund new construction and redefine itself within the community by instituting a much broader program than would necessarily be required from an urban hospital serving a similar size population base. With all of the issues listed previously in this thesis it is greatly apparent "that rural hospitals are operating in an environment of declining inpatient occupancy and [that] the "technology gap" between rural and urban hospitals is increasing."[90] To overcome burdens such as these that impose themselves upon these smaller facilities, "it is important that rural providers develop strategic plans to diversify their services into profitable areas including the provision of non-medical services."[91]

One of the main goals of this thesis is to determine new types of joint community activities, hospital activities, or other related amenities that could be incorporated into one of these new facilities to help bridge the public/private gap between the hospital and

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[89] "What's Different About Rural Health Care?" National Rural Health Association, http://www.nrharural.org/about/sub/different.html. [cited 2007 January 7]

[90] Critical, pp. 5

[91] Critical, pp. 5

the surrounding town. By broadening the scope of its program the hospital can help to increase the overall interaction between the caregivers, the patients, and the families, turning the hospital into a truly communal facility. This larger proposed scope does not necessarily "mean more and bigger buildings [are needed], but [it does mean that we need to find] ways to use what exists more efficiently."[92] Rural areas tend to "have many strengths, including dense social networks, social ties of long duration, shared life experiences, high quality of life, and norms of neighborliness, self-help, and reciprocity."[93] The idea is to build upon this already tight network to promote a community that is entirely focused on the healthcare issues of its constituents. In order to achieve this, "a strategic plan for healthcare will [need to be created which] mean[s] planning care in an integrated way across a local health community, brining care closer to where patients live and work, [and] using technology to help deliver a networked information system."[94]

Rural Health Networks

Continuing with the above theme of close knit collaboration, many individuals within the rural healthcare planning community feel that rural health networks may be part of the answer to many of these problem faced by rural hospitals. The purpose of rural health networks is "to encourage creative collaborative relationships among service providers in rural areas"[95] so that they can "help communities improve the financial

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[92] Pukszta, Michael. "Master Planning a Rural Health System for the Big Leagues." *Healthcare Design* 2004, pp. 24

[93] Phillips, Charles D., and Kenneth R. McLeroy. "Health in Rural America: Remembering the Importance of Place." *American Journal of Public Health* 94, no. 10 (2004): 1661-63. pp. 1663

[94] "Building a 2020 Vision: Future Healthcare Environments." *HD* 1991, 13-16. pp. 13

[95] Critical, pp. 10

stability, quality, and appropriateness of their local healthcare services, including a reinvention of the rural hospital."[96] Together, these facilities can work together to "integrate care delivery, resources can be pooled, and improvement efforts can be conducted collaboratively across communities."[97]

Within these small communities "members of a network might include such entities as hospitals, public health agencies, physicians, home health providers, mental health centers, substance abuse service providers, rural health clinics, social services agencies, health profession schools, local school districts, emergency services providers, community and migrant health centers, civic organizations, etc."[98] The point is this is considered a group effort to help create a truly healthy community. In an environment such as this, it is important that all health issues are brought out into the open because in these small towns "broad public concern and support are vital to the functioning of a healthy community and to ensure the conditions in which people can be healthy."[99] Dr. Julian Kuffler, Medical Director of Mount Desert Island's Care Management Program in Maine, agrees with this by stating that "Until you understand that every disease has a biological, social, and psychological component, you're going to have real problems treating it."[100]

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[96] Critical, pp. 10

[97] Korsen, Neil, Lisa M. Letourneau, Julie Osgood, and Susan Swartz. "Jhq 184 Rural Communities Improving Quality through Collaboration: The Mainehealth Story." National Association for Healthcare Quality, http://www.nahq.org/journal/ce/article.html?article_id=262. pp. 1

[98] Critical, pp. 10

[99] U.S. Department of Health and Human Services. "Healthy People 2010. 2nd Ed. With Understanding and Improving Health and Objectives for Improving Health. ." 7:1-7:30. Washington, D.C.: Government Printing Office, 2000. pp. 7:21

[100] Rowley, Thomas D. "Mt. Desert Island Community Care Initiative." In *Promoting Rural Health Care Quality Through Health Disparities Collaboratives*, 1-3. Kansas City, Missouri: National Rural Health Association. pp. 1

Georgia is one state that is fully behind this collaboration movement, publicly expressing that it envisions creating a network of "rural health care systems which are integrated community-based human services networks providing access to high quality affordable healthcare for all of Georgia's rural citizens. The focus is on the community healthcare system, not just the hospital. However, the hospital is often the anchor of the community healthcare system and is usually central to the problem and the solution."[101] From this last statement it appears as though we must begin our task by looking at redefining or reinventing the rural hospital as we know it today in terms of its social aspect within the communities in which they are based.

Reinventing the Rural Hospital

For a transformation akin to this to occur, a substantial dialog must begin between the hospital and the community. Some of the features and functions that are required for a healthy community are unknowingly being sought out by both of these parties. A project entered into jointly by these two entities could in fact help both financially and facility wise, allowing each to share in the cost of a final solution. This effort could be very beneficial for the hospital considering the small budgets that they typically have to work with, providing them with the facilities that they truly need but could never afford to build by themselves. Another benefit is that there would be an increase in the daily traffic in and around the hospital, which would help support the new business housed there as well as others that already exist adjacent to the facility site within the town.

The biggest challenge to this collaboration effort will be "bringing together medical-oriented professionals with community-oriented professionals and working as a

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[101] Critical, pp. 10

team."[102] If this arrangement works it could be a magnificent thing to behold. These two entities can work together to create a tighter, more healthy community and a more attractive facility that everyone could use. In these small towns there is an opportunity to create an event, "a village in which medical, paramedical, social, retail, and recreational are integrated… a place of life, play, and happiness."[103] These places could become the truly healing facilities that we dream of "where the acutely ill could commingle with the healthy, break[ing] down that isolation, that confinement," that they experience on a daily basis.

The task for designers involved in projects like these is to relay the message to the organizations involved that "making places as opposed to merely functional spaces requires design that acknowledges the particular nature of the site, the role of the building and the opportunities created for complementing its core activities. Civic qualities [of a facility] are reflected in the way the design responds to the local buildings but also in the facilities the building offers to the community such as public art and public space."[104] These new facilities need to become "landmark buildings with local character that are intimate in scale and contribute both physically and socially to the regeneration of the local community."[105]

Teaching Hospitals

Within these rural communities "a number of solutions to access primary care are dependent upon support from national and state policies affecting medical education and

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[102] Rowley, Thomas D. "Mt. Desert Island Community Care Initiative,. pp. 3

[103] Sloane, David Charles. "Scientific Paragon to Hospital Mall: The Evolving Design of the Hospital, 1885-1994." *Journal of Architectural Education*, no. November (1994). pp.95

[104] "Building a 2020 Vision: Future Healthcare Environments" pp. 18

[105] "Building a 2020 Vision: Future Healthcare Environments" pp. 18

placement of medical graduates in rural and urban underserved areas. At the same time, medical schools can play an important role in developing, often with grant support, special tracks that emphasize family practice and rural placements."[106] This is a very important step in overcoming the current situation of having fewer professionals than needed to care for the populations in many of these remote areas. In some towns "this has been accomplished by linking communities with academic health science centers, in a manner that promotes cooperative solutions to local health needs."[107] In other small communities they have created "programs for junior and senior high students interested in health careers that pair the students with mentors in the health professions, help them pursue educational grants and scholarship and… instill in the students a sense of… loyalty to the community and the desire to give back to it."[108]

Adding a feature like this to a rural healthcare facility would help to increase awareness of the community itself throughout the surrounding areas. Many problems associated with providing adequate care for the rural areas is a lack of understanding of their specific requirements since they are typically more tailored or unique than other types of environments. By involving higher education institutions with the hospital, more people from outside the community would be required to travel here and interact with the facility and the town on a more frequent basis. This influx of visitors and volunteers would raise the need for local business to be located in and around the facility due to the increased amount of pedestrian traffic present there on a daily basis.

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[106] Gamm, pp. 68

[107] Critical, pp. 27

[108] Rowley, Thomas D. "Community Health Development, Inc." In *Promoting Rural Health Care Quality Through Health Disparities Collaboratives*, 1-4. Kansas City, Missouri: National Rural Health Association. pp. 3

Community Involvement

Although the history of rural health research "is deeply rooted in concerns about access to care and an equitable distribution of health personnel… many of the major public health problems faced in rural areas (e.g., obesity, tobacco use, failure to use seat belts) are not likely to respond to an increased presence of general practitioners, physician specialists, or physician extenders. Instead, these challenges call … for a population health perspective with a focus on prevention and a healthy lifestyle."[109] To most of these small community hospitals "prevention is a fundamental principle of healthcare and public health. Indeed, [for them,] to prevent disease is preferable to treating disease after it has occurred."[110]

The goal in these rural towns is to "improve community health and wellbeing by reaching out, educating, and working with people on their own terms and in their own environments… to help people take care of themselves."[111] In order to "maximize [this] impact, hospitals need to find ways to extend… efforts beyond the inpatient setting and into the community."[112] The new features programmed into these facilities "may [help to] break down barriers between the hospital and surrounding community… [to] serve as a counterpoint to the broader societal diminishment of public space… [by becoming] a renewed public space."[113] It will be a place which will "evoke an inviting combination of

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[109] Phillips, pp. 1662 – 1663

[110] Green Building Committee. "Green Healthcare Construction Guidance Statement." 1-9. Chicago, IL: American Society of Healthcare Engineering, 2004.

[111] Rowley, Thomas D. "Mt. Desert Island Community Care Initiative,. pp. 2

[112] Korsen, pp. 8

[113] Sloane, pp.82-83

social life and community education."[114] To adequately accomplish this, a facility needs to contain "public areas for cultural and social activities such as exhibitions, events, library, café; social spaces for reception and waiting to stimulate and support informal exchanges; single rooms with high levels of confidentiality and dignity for consulting, diagnosis, and treatment."[115]

Public Education

The Institute for Family-Centered Care contends that facilities need to be designed "for enhancing patient and family access to information and support."[116] In support of this stance, many studies have shown that "individualized education and counseling by health care providers… in these settings… have positive and clinically significant effects on behavior in persons with chronic and acute conditions."[117] The health care setting in these small towns "is critical to the delivery of health education and health promotion."[118] Because of this fact "providers must be cognizant of these opportunities and prepared to provide appropriate patient education. Institutions that employ providers also must be cognizant and allow sufficient time and training for patient education and counseling to occur… [because] community-based programs can reach the entire population"[119]

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[114] Sloane, pp. 90

[115] "Building a 2020 Vision: Future Healthcare Environments" pp. 18

[116] "Design Planning: Key Priorities." In *Hospitals Moving Forward with Family-Centered Care*. Bethesda, MD: Institute for Family-Centered Care, 2006. pp. 1

[117] U.S. Department of Health and Human Services, pp. 7:21

[118] U.S. Department of Health and Human Services, pp. 7:21

[119] U.S. Department of Health and Human Services, pp. 7:21

These are some of the main reasons that healthcare facilities in these rural areas need to have facilities on-site where they can educate the community about the importance of healthy living and also lecture on many of the issues that plague these small towns such as teen pregnancy and substance abuse. With the availability of these types of facilities, they can offer "educational programs, medical screenings, health assessment tools, and various other services… [like] behavior health counseling."[120] Some examples of this would be offering "public health services like immunization, diabetes management and sexually transmitted disease prevention… [or] opening a teaching kitchen to educate people about healthy cooking."[121]

The following is a list of potential public features that was created by the research team as part of a brainstorming exercise. These specific features, focusing on education, could possibly be incorporated into one of these rural healthcare facilities to help expand community involvement and interaction with the hospital while also providing valuable resources for the community.

- **Educational Center**
    - Teaching Kitchen (Healthy Cooking)
        - Nutrition
        - Diet
    - Psychology
    - Parenting
    - Birthing
    - Family Planning
    - Substance Abuse
    - Sexually Transmitted Diseases

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[120] Rowley, Thomas D. "Mt. Desert Island Community Care Initiative,. pp. 2

[121] Rowley, Thomas D. "Community Health Development, Inc." pp. 3

- **Conference Center/Event Facility**
    - Auditorium/Performing Arts Area
        - Drama Group
    - Conference Rooms
        - Support Groups
    - Meeting Rooms
        - Rotary Clubs, Book Clubs, Investment Clubs, etc.
    - Activity Rooms
        - Weddings
        - Dances
        - Bingo

- **Library**
    - Classrooms
        - Classes
            - Health Education
            - Language
            - Computers

Physical Health

The following is a list of potential public features that was created by the research team as part of a brainstorming exercise. These specific features, focusing on physical health, could possibly be incorporated into one of these rural healthcare facilities to help expand community involvement and interaction with the hospital while also improving the physical health of the town population.

- **Fitness Center**
    - Weightlifting
    - Cardiovascular Exercise
    - Indoor Walking Track
    - Pool
        - Swim Team

    - Physical Therapy
    - Occupational Therapy
    - Classes
        - Martial Arts/Self Defense
        - Dance
        - Ballet
        - Yoga
        - Curves
        - Aerobics

- **Spa**
    - Massage Therapy
    - Facials
    - Manicure/Pedicure
- **Outdoor Parks**
    - Meditation & Healing Gardens

Cultural Functions

The following is a list of potential public features that was created by the research team as part of a brainstorming exercise. These specific features, focusing on the cultural aspects of society, could possibly be incorporated into one of these rural healthcare facilities to help expand community involvement and interaction with the hospital.

- **Art Gallery**
    - Display area
    - Classrooms
        - Art Classes

- **Museum**
    - Local Artifact displays
    - Historical Society
- **Chapel**

Revenue Generators

According to the Congress of New Urbanism, "towns should bring into proximity a broad spectrum of public and private uses [with a] "concentration of civic, institutional, and commercial activity… embedded in neighborhoods and districts, not isolated in remote, single-use complexes."[122] These sentiments parallel some of the main ideas listed previously in this thesis of the Smart Growth movement. If these rural facilities approach integration in this way it will open up additional pathways for community involvement. One aspect of this will result in increased pedestrian traffic due to a more diverse communal facility. The hospital has an opportunity to help sustain its financial wellbeing by providing additional features for the town in which it resides. These functions could help to financially supplement the traditionally underproductive nature of rural healthcare.

Some of these services being suggested are already being performed by the hospital even though they are not typically recognized by the general population. With some physical and procedural changes to existing operations new profitable avenues do exist and are attainable. As an example, many operational aspects of hospitals also have commonalities that we find present within hospitality settings such as hotels. Hospitals are already performing things like housekeeping and maintenance, food service, and concierge services with their current staff. The hospital could offer rooms to families that

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[122] "Charter of the New Urbanism." 1-2: Congress for the New Urbanism, 2001. pp. 2

have loved ones admitted or they could offer these rooms to the general population at discounted rates.

The following is a list of potential features that the hospital could incorporate within its facility to help generate additional income that was created by the research team as part of a brainstorming exercise. The goal is to expand community involvement and interaction between the hospital and the town to change the perception of hospitals in general, while also turning it into a more financially stable and viable entity within the community.

- **Fitness Center**
- **Spa**
- **Child Care Center**
- **Food Court**
- **Leasable Retail Spaces**
- **Hotel**
- **Movie Theater**
- **Game Room**

Summary

As stated at the beginning of this section, one of the main goals of this thesis is to determine new types of joint community activities, hospital activities, or other related amenities that could be incorporated into one of these new facilities. This is an important task because due to the typical financially underachieving nature that we find in these smaller facilities, new sources of revenue must be found to help them remain operational. The addition of these new features could also help to bridge the public/private gap between the hospital and the surrounding town.

By broadening the scope of its program the hospital can help to increase the overall interaction between the caregivers, the patients, and the families turning the hospital into a truly communal facility. The only way that this can be achieved is to locate the facility near the main center of the population, directly in town. Although the initial costs for the facility may be more expensive with this type of construction, the social capital that will evolve from its implementation as a more interactive and vital part of the community, will be worth the expense to all parties involved. Having the facility within the downtown area will increase its visibility, increase its use, and hopefully increase the overall curiosity about healthcare and wellbeing itself. Within our society today, typically the more accessible things are, the more they tend to be used.

CHAPTER 6

SCOPE OF SERVICES

Trying to determine the scope of services offered by a local hospital to adequately care for a small community is a more daunting task than many people may think. This is "one of the hardest challenges for rural providers… [because typically] people are not fully informed about the unique needs of rural health care."[123] In truth, "presenting a greater barrier to health care access and preparedness in rural communities is the limited versatility of rural hospitals in providing care and expanded services as compared to their urban counterparts."[124] This statement by no means specifies the urban model as a template that should be strictly followed by these smaller facilities, but it does lead to the conclusion that offering a wider array of services with versatility built in would benefit the make-up of one of these facilities.

As mentioned earlier in Chapter 3, "mobility makes it possible for healthcare consumers to travel to distant areas for services that are not locally available."[125] This creates a large problem to consider when determining what services to offer to a population because "once consumers are accustomed to and comfortable with patronizing larger health care centers that can conveniently provide a wider array of services, they will tend to commute as a matter of course rather than necessity. This is similar to the "mall effect" that bedevils small-town retailers. In the end, such consumers will look to

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[123] Kemp, pp. 17

[124] Gursky, pp. 17

[125] Imerman, Mark, Liesl Eathington, Kanlaya Jintanakul, and Dan Otto. "Hospital Utilization, Changing Demographics, and Implications for Rural Health Care Services." 1-76: Department of Economics. pp. 45

local hospital facilities only for emergency care, and that level of patronage most likely cannot sustain the facility."[126]

The final combination of services offered to a local population can also be tricky to determine "because the main drivers of quality in rural hospitals are likely to be local residents, [and] the extent to which rural hospitals satisfy the community will determine whether a rural hospital's scope of services will grow or shrink."[127] In the end this means that "ultimately, the rural hospitals that survive are the ones that clearly demonstrate they are providing high-quality health care."[128] Within this definition of high quality healthcare, it is also "critical that community-based health care systems… provide [proper] care to the uninsured and to Medicaid and Medicare populations."[129]

Core Services Required for a Community

For the purposes of this research we need to select a population base as our study platform, specifically for trying to determine how to decide which services are required for different communities. We will begin by drawing on previously mentioned information, the database of hospitals within the State of Georgia that contain less than 60 patient beds, mentioned in Chapter 2. According to Table 2.2 from this research, the following are the median numbers for the 57 rural hospitals within the study:

- Average Number of Beds Per Hospital 35
- Average Number of Services Offered 10

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[126] Imerman, pp. 45

[127] Kemp, pp 6

[128] Kemp, pp. 7

[129] Critical, pp. 18

- Average Number of Hospital Employees 120
- Average Population of Towns 4003
- Average % of Population Employed by Hospital 4.50%

We will use these numbers as our platform to create a typical list of hospital services. This list will give us a general median description of appropriate services to use as a starting point for future determinations. This list can then be added to or subtracted from based on additional relevant information. We will use these numbers as our platform to create a typical list of hospital services.

From the information we can see that our typical hospital is going to be a 35 bed facility, with 120 employees, located in a town of 4000 people. For this particular demographic the research suggests that they would typically offer 10 services. We would then suggest that they offer the following services to their constituents which are the top 10 services, by percentage, from the overall list of services offered, shown in Table 6.1:

- In/Out Surgical
- Lab (Clinical)
- Radiology
- Emergency Department
- Respiratory Care
- Pharmacy
- Dietary
- Pediatric
- ICU
- Physical Therapy

We can now assume this to be our list of core services required for a community.

Table 6.1 – Services Offered at 57 Rural Hospitals within Georgia

Services	# of Facilities Offered at	% of Facilities
In/Out Surgical	56	98%
Lab (Clinical)	55	96%
Radiology	54	95%
Emergency Department	50	88%
Respiratory Care	49	86%
Pharmacy	48	84%
Dietary	32	56%
Pediatric	29	51%
ICU	27	47%
Physical Therapy	26	46%
Obstetrics	25	44%
Social Services	25	44%
Nuclear Medicine	14	25%
Rehab	14	25%
Long Term Care	13	23%
Coronary Care	12	21%
Speech Pathology	12	21%
Occupational Therapy	11	19%
Neonatal Nursery	8	14%
Sleep Lab	8	14%
Dental	5	9%
Home Care	5	9%
Orthopedics	4	7%
Lab (Anatomical)	3	5%
Acute Renal Dialysis	2	4%
Hospice	2	4%
Optometry	1	2%
Podiatry	1	2%
Psychiatric	1	2%
Shock Trauma	1	2%

Results of the Population Breakdown of Services

Across the sections of the population breakdown conducted by the research team (See Appendix D) there are 6 services that are commonly within the top 10 services offered in all of the segment groups. These services are:

- In/Out Surgical
- Lab (Clinical)
- Radiology
- Emergency Department
- Respiratory Care
- Pharmacy

There was one service that was contained within the top 10 services in 6 out of 7 segments:

- Dietary

Three of the top 10 services were found to have a smaller percentage within the top 10 services offered, contained in 4 out of the 7 segments:

- Pediatric
- ICU
- Physical Therapy

One service that was surprisingly within the top 10 services offered in 5 out of 7 segments was:

- Obstetrics

Other services appearing within the top 10 services offered within at least 1 segment are:

- Nuclear Medicine
- Long Term Care
- Speech Pathology
- Neonatal Nursery
- Social Services – contained in 2 segments

The average number of services offered throughout the 7 segments ranges from 8.88 – 12 with 6 of the 7 segments showing that they contain 10 services or more.

Table 6.2 – Average Number of Services by Town Size

Town Size	**Average # of Services**
0 – 1,000 People	**9.5**
1,000 – 2,000 People	**10.83**
2,000 – 3,000 People	**8.88**
3,000 – 4,000 People	**9.93**
4,000 – 5,000 People	**11**
5,000 – 6,000 People	**12**
6,000 – 10,000 People	**11.33**

From these statistics it appears that our database averages that we selected as our "basis of design" earlier in this section for services offered are fairly accurate in terms of each of the population segments individually as well as the overall database. The only service that will need to be researched more about its relative importance versus the lowest 3 services in the study averages is Obstetrics which had a strong showing in the population breakdown portion of this study.

CHAPTER 7

CURRENT AND ADEQUATE FACILITIES

When questions of health arise, people tend to want access to the most current technology and procedures available in an appropriate setting. The problem is that the perception of most "hospitals today [is that they] are noisy, cheerless places that patients find cold and frightening."[130] In response to this, one of the largest questions in planning a new healthcare facility in the modern day and age is what designates as "current and adequate." This is often a tough question to answer because "technology is driving an unyielding magnitude of operational and procedural changes" which causes hospitals to have to constantly plan for the present and the future at the same time.[131] Many hospitals are often confused in regards to what features and services they need to include or provide within their facility to achieve this "current and adequate" designation. Some experts define it as a mix of what the facility contains in terms of implemented Evidenced-Based Design (EBD) research features, combined with the overall level of technology instituted, and finally what equipment is installed and how is it installed.

In their recent publication, Improving Healthcare with Better Building Design, The Center for Healthcare Design suggests that organizations that are committed to providing these types of current and adequate environments "will realize sustained strategic business advantages over their competitors by:

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[130] McCarthy, Michael. "Healthy Design." *Lancet*, July 31 2004, pp. 405

[131] Marberry, Sara O., ed. *Improving Healthcare with Better Building Design*, Ache Management Series. Chicago, Illinois: Health Administration Press, 2006. pp.1

- improving the quality of care for their patients;
- enhancing their operational efficiency and productivity;
- increasing their market share by attracting more patients;
- being better able to recruit and retain highly qualified staff;
- increasing philanthropic, corporate, and community support."[132]

All of these aspects are problems that rural healthcare facilities face every day of their existence. For these small facilities then, the ultimate goal is to figure out how to incorporate these beneficial types of elements based on the assumption that they will help to solve these particular problems. The major task at hand, though, is to figure out how to achieve this implementation while still keeping costs tolerable and within the budgetary framework of these smaller hospitals and their communities. These facilities have to be willing to perform this difficult task because "as healthcare leaders… [they] have an extraordinary opportunity and serious responsibility to truly build better hospitals – hospitals that actually facilitate physical, mental, and social well-being and productive behavior in their occupants."[133]

Evidence-Based Design

Healthcare design has to primarily concern itself with creating "a place where patient safety is assured; quality of care is paramount; efficiency is maximized; and staff feel satisfied with their jobs, are supported by management and by the work environment, and can do their best work."[134] Many of these goals can be achieved through a process of

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[132] Marberry, pp.3

[133] Marberry, pp.142

[134] "Designing the 21st Century Hospital." 1-18. Concord, California Center for Health Design, 2006. pp. 5

research and evaluation known as Evidence-Based Design. This particular approach to design "is the deliberate attempt to base design decisions on the best available research evidence,"[135] with the goal of "improving outcomes and of continuing to monitor the success of designs for subsequent decision-making."[136] The main aspects of this method are listed in Table 7.1.

Much of the research involving these ideas focuses on the impact of quality, safety, and the built environment on patients, families, and staff. The parameters included in this research "allow a clear understanding of behaviors that cause certain outcomes and design solutions that support those behaviors."[137] These techniques are typically "used to [help] create environments that are therapeutic, supportive of family involvement, efficient for staff performance, and restorative for workers under stress."[138] A list of some of the main aspects and goals present in healthcare design that eventually evolved into the realm of Evidence-Based Design movement are displayed below in Table 7.1.[139] These factors were created by the Institute of Medicine as items that are present in a best practice facility concentrating on providing quality care.

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[135] Hamilton, Kirk. "The Four Levels of Evidence-Based Practice." *Healthcare Design Magazine*. pp.1

[136] Ulrich, Roger, and Craig Zimring. "The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity." In *Designing the 21st Century Hospital Project*, 1-69: The Center for Health Design, 2005. pp.26

[137] Marberry, pp. 8

[138] Hamilton, pp. 1

[139] Marberry, pp. 5-6

Table 7.1 – Ideas that led to Evidence-Based Design

Aspect	**Reasons**
Patient centered	If the focus is on the patient, the building design must reflect and support this by honoring the individual and respecting choice. Patient-centered design features include private rooms, positive distractions, accommodation for family members, and ways to access information.
Timely	The building environment can contribute to the timeliness of care by facilitating access to patients and communication. Related design features include the layout of units, nurse station design, conference areas, and resource areas.
Efficient	The building design can reduce waste in the healthcare system by facilitating reduced transfers and increased work efficiency. Efficiency design features include decentralized nursing and universal patient rooms.
Equitable	The building design can contribute to equitable care by being family centered and accessible to all. Design features that address equity include single patient rooms with accommodations for family members, respite areas, site location and layout, and welcoming, private admitting areas.
Effective	The building design can help the delivery of care to be more effective through improved sleep quality, decreased infections, lower stress, and increased staff satisfaction. Design features that address care effectiveness include private patient rooms; location of hand-washing facilities; elimination of environmental stressors such as noise, glare, odor, and poor indoor air quality; better wayfinding; supportive staff work areas; staff lounges; and positive distractions.
Safe	The building design can help the delivery of care to be safer by facilitating reduced patient falls, medical errors, and infections. Design features that address safety include decentralized nursing stations, room layout, elimination of environmental stressors, location of hand-washing facilities, materials selection, and improved air quality.

In designing for the healthcare environment there are many factors that could eventually create problems for design professionals and hospital administration alike. Most of these need to be, and can be solved during the initial planning process of these facilities to help them run smoothly once they are completed. Some examples of these issues are that "poor air quality and ventilation, combined with having two or more patients in the same room, are prime causes of nosocomial infections. Inadequate lighting is linked to patient depression as well as medication errors by hospital staff. Designs that keep nurses away from the bedside—"hunting and gathering" needed supplies… contribute to patient falls… [and] nurses often have to complete charting and fill medication orders in crowded, noisy, makeshift areas, which can lead to errors and increase staff burnout."[140] Luckily, for healthcare designers and practitioners, the body of research documenting as well as suggesting solutions to these and many other typical healthcare facility issues is growing every day.

In addition to the environmental issues listed above there are other problems that need to be addressed in the early stages of healthcare design. Research shows that "hospitals produce stress in a variety of ways. Excessive noise from paging systems, alarms, machines, and voices upset patients and distract staff. Feelings of helplessness and anxiety are triggered by poorly designed hospitals that force bedridden patients to stare at glaring ceiling lights and or are laid out in such a confusing way that visitors become lost in a maze of hallways. Double-occupancy rooms impinge on patients' privacy, disturb their rest, impede their recovery and prompt the majority of time-consuming, error-associated patient transfers."[141] The list goes on and on, but we now

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[140] "Designing the 21st Century Hospital" pp. 6

[141] "Designing the 21st Century Hospital" pp. 6

have the ability to address and solve these issues adding value to the quality of healthcare that we are able to administer in these particular settings.

The Values of Evidence-Based Design

In the field of healthcare, "just as a caregiver has the ability to help the patient restore balance, the built environment has the potential to be therapeutic."[142] It is evident that "both theory and research indicate that a well-designed setting can influence patient satisfaction, employee performance, and positive clinical outcomes."[143] Due to this fact, Evidence-Based Design is a rapidly growing new area within the field of healthcare architecture and planning. With its unique approach it "appeals to the scientific minds of physicians and other clinicians who are trying to practice on the basis of medical evidence. It offers the prospect of improving clinical out-comes, and it gives patients and families the prospect of a higher quality experience in their healthcare encounters."[144]

It is also growing in its use within hospital facility design because it "appeals to the business-minded administrative leaders of hospitals. It offers them the prospect of reduced costs and/or improved organizational performance and can provide justification for some of the costly decisions made on their building projects."[145] The evidence provided today "is now so conclusive in many areas – and the financial impact so powerful – that it would be irresponsible for a board and a CEO to proceed without fully including evidence-based design in their deliberations and decisions."[146]

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[142] Marberry, pp.112

[143] Marberry, pp.123

[144] Hamilton, pp.7

[145] Hamilton, pp.7

[146] Marberry, pp. 126

Determination of Evidence-Based Design Features

The ability to engage administrators in a conversation of whether or not to add specific features to a facility is a very important aspect of the appropriate planning of one of these rural facilities. In order to conduct these conversations, though, there must be a representable and accurate body of knowledge to discuss. In this section of the thesis an example will be given showing resultant costs and effects based on the implementation of certain features of Evidence-Based Design.

The following database of Evidence-Based Design features and their associated costs was compiled based on the Fable Hospital model.[147] See Table 7.2 below. This model is a fictional example of a 300 bed replacement hospital project created by the Center for Health Design. This exercise was performed in an effort to understand the financial impact of implementing these types of features into healthcare facilities, as well as the eventual cost savings associated with them. This model concludes that the implementation of these listed features requires an additional 5% investment in up-front construction costs, all of which should be recoverable by the facility within the first 12-15 months of operation.

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[147] Marberry, pp. 130 – 132

Table 7.2 – Fable Hospital Model Evidence-Based Design Features

Evidence Based Design Features		
Features	**Reasons**	**Cost Implications**
Larger private patient rooms	Oversized single rooms with dedicated space for patient, family, and staff activities and sufficient capacity for in-room procedures.	Based on an assumption of an increase of 100 square feet for each single patient rooms; 15 percent of the beds (X) are in an intensive care unit (ICU) configuration **($27,500 per Patient Room)**
Acuity Adaptable Rooms	Acuity-adaptable rooms standardized in shape, size, and headwall to eliminate the need to move patients as their condition changes.	Assumes additional medical gasses and monitor mounts in every room to provide ICU/ step-down capabilities with plug-in monitors **($4,768 per Patient Room)**
Oversized Operating Rooms and Surgery Suites	Flexible spaces for advanced technologies, including operating rooms sized for robotic surgery, endovascular suites for minimally invasive surgery with sophisticated imaging, and imaging rooms designed to support continuous equipment advances.	
Larger windows	The design maximizes daylight exposure to patient rooms and work spaces.	The typical 3 ft. x 5 ft. patient room window is increased to 5 ft. x 8 ft. **($745 each)**
Larger patient bathrooms with double-door access	Double-door bathroom access to enable caregivers to more easily assist patients to and from the bathroom on foot or in wheelchairs.	The larger space allows two staff members to assist a heavy patient to the toilet, and the enlarged doorway allows patient beds to be rolled in a sitting configuration closer to the bathroom **($8,800 per toilet)**
Hand-hygiene facilities	Alcohol-rub hand-hygiene dispensers located at the bedside in each patient room to reduce staff-to-patient transmission of pathogens.	Hand-washing sink with foot pedals at the doorway to each acute patient room. Alcohol-based hand-rub dispenser at the bedside. **($6,258 per Patient Room)**

Table 7.2 – Fable Hospital Model Evidence-Based Design Features – Cont.

Features	Reasons	Cost Implications
Decentralized Nursing Substations	Decentralized, barrier-free nursing stations that place nurses in close proximity to their patients and supplies, most of which are stored in or near patient rooms.	Alcoves proximate to clusters of beds provide a charting surface, medication cassettes, supplies, alcohol-based hand-rub dispenser, and access to the information system **(one per every four beds @ $12,963)**
Additional HEPA filters	High-efficiency particulate air (HEPA) filters to improve the filtration of incoming outside air and eliminate re-circulated air.	Installed HEPA 99.97% filtration on all air-handling units (AHUs) serving patient areas of the hospital **(@ each AHU: $11,175/unit)**
Noise-reduction measures	Noise-reducing measures, including sound-absorbing floors and ceilings and a wireless communications system that eliminates overhead paging.	Construction materials were chosen for their sound absorption and control characteristics, and carpet was specified in most public areas. Upgraded ceiling and wall materials include additional layers of sheetrock for sound absorption and acoustical ceilings
Additional family and social spaces on each patient floor		Added more public space in the form of a family-style great room and family kitchen on each patient floor **($127,500 per floor)**
Health information resource center for patients and visitors	Patient education centers on each floor offering brochures, books, videotapes, and access to the Internet.	Each patient floor has a resource center **($23,800 per floor)**
Patient Room Internet Access	Internet access to disease-specific information and online support groups that improve patient and family understanding of illness.	
Meditation Rooms on each floor		Quiet spaces for family and staff meditation are located on each patient floor **($15,300 per floor)**
Consultation Rooms on each floor	Consultation spaces conveniently located to facilitate private communication between caregivers and families.	**($15,300 per floor)**

Table 7.2 – Fable Hospital Model Evidence-Based Design Features – Cont.

Features	Reasons	Cost Implications
Art for Public Spaces and Patient Rooms	Peaceful settings, including artwork displays, space to listen to piano music, and gardens with fountains and benches, to moderate the stress of building occupants.	Based on the assumption of an additional art allowance beyond the typical budget. Facility also rotates loaned artwork from local artists and solicits donated art **(lighting enhancements to highlight selected artwork: $20,000; increase to art and sculpture allowance: $50,000)**
Healing gardens (interior and exterior)	Peaceful settings, including artwork displays, space to listen to piano music, and gardens with fountains and benches, to moderate the stress of building occupants.	Based on the assumption of additional sums above normal landscape cost for outdoor healing gardens, including a meditation garden, strolling garden, pond, outdoor meeting area, outdoor dining, and children's playground **(increase to exterior landscape allowance: $130,000) The interior environment has been enhanced with indoor plantings, fountains, and atrium space (increase to interior design allowance: $25,000)**
Staff gym	Staff support facilities, including a staff-only cafeteria, windowed break rooms with outside access, a daycare facility, and an exercise club.	A gym with exercise machines, changing rooms, toilets, and showers is provided **($250,000 + allowance of $80,000 for equipment)**

PART THREE: DESIGN EXERCISE

SUMMARY

- Urban Design - The overall premise is to create a building, and eventually another area of town, that is pedestrian based and dedicated to promoting the physical and financial health of its residents by helping to revitalize the area.

- Building Design - The building has to remain respectful to its surroundings and the design must be planned for expansion during the initial phases.

- Community Features - The ultimate goal in introducing community features into a facility like this is to help change the current level of interaction between society and healthcare while also providing much needed services and spaces to entities that could not typically afford them on their own.

- Services - Let the facility offer to its constituents the main services that would allow for them to live healthier and less stressful lives. It should provide what is needed based on the specifics of the community and nothing more.

- Evidence-Based Design - With these features the facility can achieve a higher quality of care that is not typically available in these smaller settings. The goal is to add as many as possible to the facility without drastically expanding the building footprint or the existing budget.

CHAPTER 8

DESIGNING A 35 BED IN-TOWN RURAL HOSPITAL

As a way to test and evaluate the ideas proposed and suggested by this thesis, a design exercise was undertaken based completely on the findings and recommendations contained within this research. The purpose of this exercise was to designing a rural hospital facility for a small town on an existing in-town site selected by the research team.

Design Questions

The questions that need to be addressed that are related to this proposed design project are simple and straightforward:

- Can a rural hospital program be built on an in-town site and work within the existing block structure?
- Can the program of one of these facilities fit on an in-town site?
- How can the use of a restricted site be maximized?
- How can sufficient expansion be planned for on a restricted site?
- How can departments be arranged efficiently in a multi-story structure?
- How can the existing context of an in-town site be responded to in order to benefit the town and the facility at the same time?
- How will the facility address public vs. private areas?
- How can the facility effectively separate hospital and community features?
- How can open space and green space be incorporated into the facility?
- How can parking be accommodated on site in an in-town setting?
- How will service access be handled (deliveries and ambulance)?

- How will pedestrian access be handled?
- How will additional noise be addressed?

Design Strategies

The basic premise for the design strategies that will be used to address the above questions come directly from the different approaches described throughout Part Two of this thesis. These different methods, combined in the appropriate way, can work together to solve most of the issues that these rural hospitals face on a daily basis.

Urban Design

By moving the hospital onto an in-town versus out-of-town site, the goal is to integrate the hospital into the existing structure of the town and try to appropriately address the local context. An urban response needs to be taken towards the existing block structure, pushing the building to the edges of the site which will create a street-front similar to other existing buildings in town. At street level, along all of the facades of this building, is the perfect location to introduce more public spaces as well as lease spaces for retail, food service, or other types of businesses into the area. This will make the hospital perform more like a true mixed-use development. The overall premise is to create a building, and eventually another area of town, that is pedestrian based and dedicated to promoting the physical and financial health of its residents by helping to revitalize the area.

Building Design

The building has to remain respectful to its surroundings as well as match the overall scale of the area that it is being placed in. This can be hard when trying to place a building this large into a more confined area. One way to approach this is through planning for expansion during the initial design and construction. This approach also enables the facility to save time and money during future expansion and also lets people

know what the final design of the fully constructed and expanded building will look like in the future, and how it will eventually interact with its surrounding context. Also by creating a sustainable structure that can be added onto in the future, the facility will create less wasted materials and create less of an environmental impact on the area in the future. The facility should remain a low-rise structure, stepping back from the street with each level change to also help decrease the overall feeling of the size of the facility.

Community Features

The ultimate goal in introducing community features into a facility like this is to help change the current level of interaction between society and healthcare while also providing much needed services and spaces to entities that could not typically afford them on their own. These features could help the hospital decrease their construction costs and improve their revenue stream at the same time. Many of the healthcare problems that are faced in these rural areas are preventable and or treatable with the right interaction and response from the healthcare industry. These features need to be place on or near the street in a more public area of the building so that they are more readily accessible to pedestrian traffic. This should increase their use by the residents of the town.

Services

The goal is not to turn this small rural hospital into a regional medical center, but let it offer to its constituents the main services that would allow for them to live healthier and less stressful lives. The facility should provide what is needed based on the specifics of the community and nothing more. This will help them from spending money on services that are rarely needed and money on equipment and space that will be sparsely used. The departments for these services need to be arranged in ways that let them share spaces and resources to cut down on initial square footage and construction costs.

Evidence-Based Design

With the addition of evidence-based design features, the facility can achieve a higher quality of care that is not typically available in these smaller settings. The goal is to add as many of these features as possible to the facility without drastically expanding the building footprint or the existing budget. The two easiest features to provide, that should have the greatest initial impact, are the introduction of single patient adaptable rooms that reduce hospital acquired infections and the need for patient transfers, and the incorporation of positive distractions such as views to nature which decrease stress and increase patient satisfaction.

Design Testing

The resultant design will be included within an interview based survey (see Appendix H) that will be administered to design professionals and hospital administrators to attain some true market feedback about the proposed ideas and solutions.

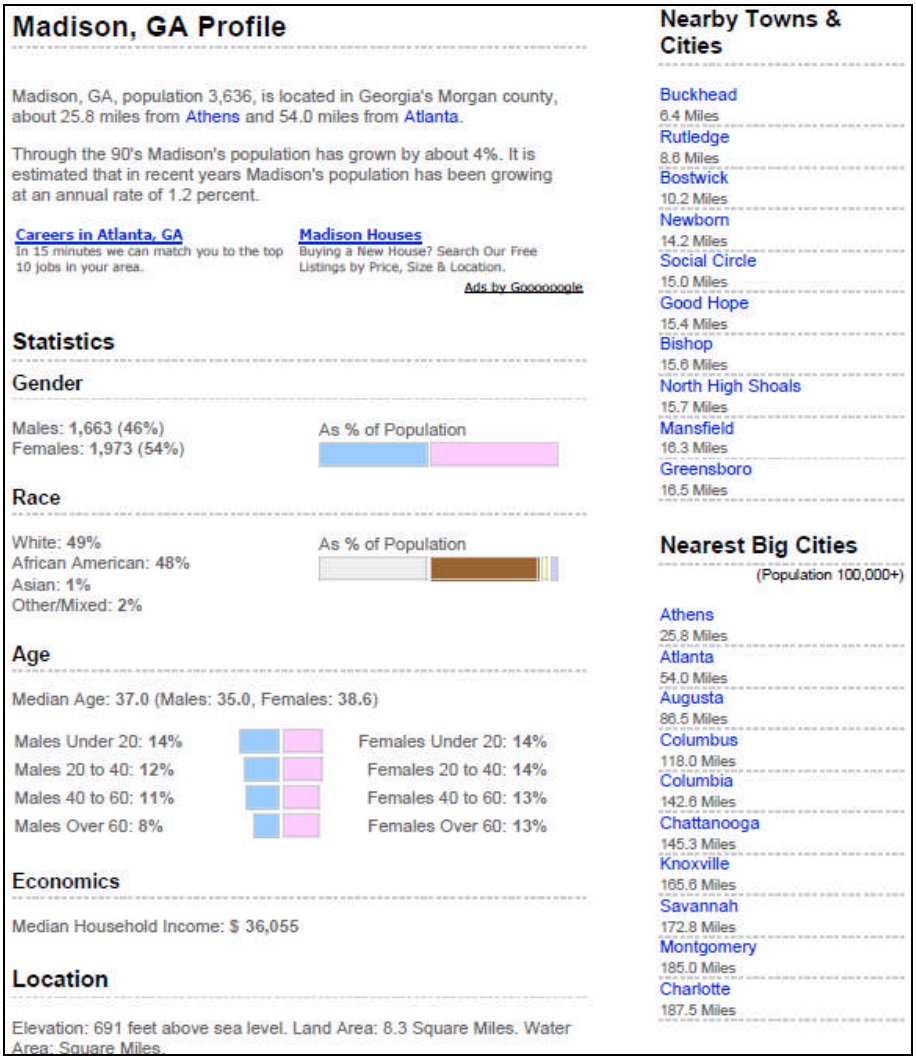
Location Selection

To select a viable location for this design exercise, certain criteria were created as a measuring device for assessing the proposed towns. The general selection criteria were selected from the study averages found in Chapter 2 of this thesis and are as follows.

- A location that is around 30 miles or more from a larger city
- A current population near the study average of 4,000 people
- An adequately sized site within the current downtown area
- A site located on a main road within the current downtown area
- A local hospital with a bed count near the study average of 35 beds
- A local hospital that currently offers near the study average of 10 services
- A local hospital that is older and on the verge of needing to be replaced
- A local hospital that is located on the edge of town or outside of town

The Town

The town that the research team ultimately selected for this particular design exercise was Madison, Georgia. This town was selected based on its compliance with all of the above listed decision criteria. General demographic information for the town is listed in Figure 8.1.[148]



Madison, GA Profile

Madison, GA, population 3,636, is located in Georgia's Morgan county, about 25.8 miles from Athens and 54.0 miles from Atlanta.

Through the 90's Madison's population has grown by about 4%. It is estimated that in recent years Madison's population has been growing at an annual rate of 1.2 percent.

Careers in Atlanta, GA
In 15 minutes we can match you to the top 10 jobs in your area.

Madison Houses
Buying a New House? Search Our Free Listings by Price, Size & Location.

Ads by Gooooooogle

Statistics

Gender

Males: 1,663 (46%)
Females: 1,973 (54%)

As % of Population

Race

White: 49%
African American: 48%
Asian: 1%
Other/Mixed: 2%

As % of Population

Age

Median Age: 37.0 (Males: 35.0, Females: 38.6)

Males Under 20: 14%	Females Under 20: 14%
Males 20 to 40: 12%	Females 20 to 40: 14%
Males 40 to 60: 11%	Females 40 to 60: 13%
Males Over 60: 8%	Females Over 60: 13%

Economics

Median Household Income: $ 36,055

Location

Elevation: 691 feet above sea level. Land Area: 8.3 Square Miles. Water Area: Square Miles.

Nearby Towns & Cities

Buckhead 6.4 Miles
Rutledge 8.6 Miles
Bostwick 10.2 Miles
Newborn 14.2 Miles
Social Circle 15.0 Miles
Good Hope 15.4 Miles
Bishop 15.6 Miles
North High Shoals 15.7 Miles
Mansfield 16.3 Miles
Greensboro 16.5 Miles

Nearest Big Cities

(Population 100,000+)

Athens 25.8 Miles
Atlanta 54.0 Miles
Augusta 86.5 Miles
Columbus 118.0 Miles
Columbia 142.6 Miles
Chattanooga 145.3 Miles
Knoxville 165.6 Miles
Savannah 172.8 Miles
Montgomery 185.0 Miles
Charlotte 187.5 Miles

Figure 8.1 – Selected Town Demographic Information

[148] IDcide - Local Information Data Server. "Madison, Georgia Profile." http://www.idcide.com/citydata/ga/madison.htm. [cited 2007 March 12]

The existing hospital site is located on a main local highway approximately 1.2 miles from the current downtown area. See Figure 8.2. The downtown area also has two local highways that run directly through it that allow for easy vehicular access through town and from Interstate 20 which lies just a few miles south of the town itself.

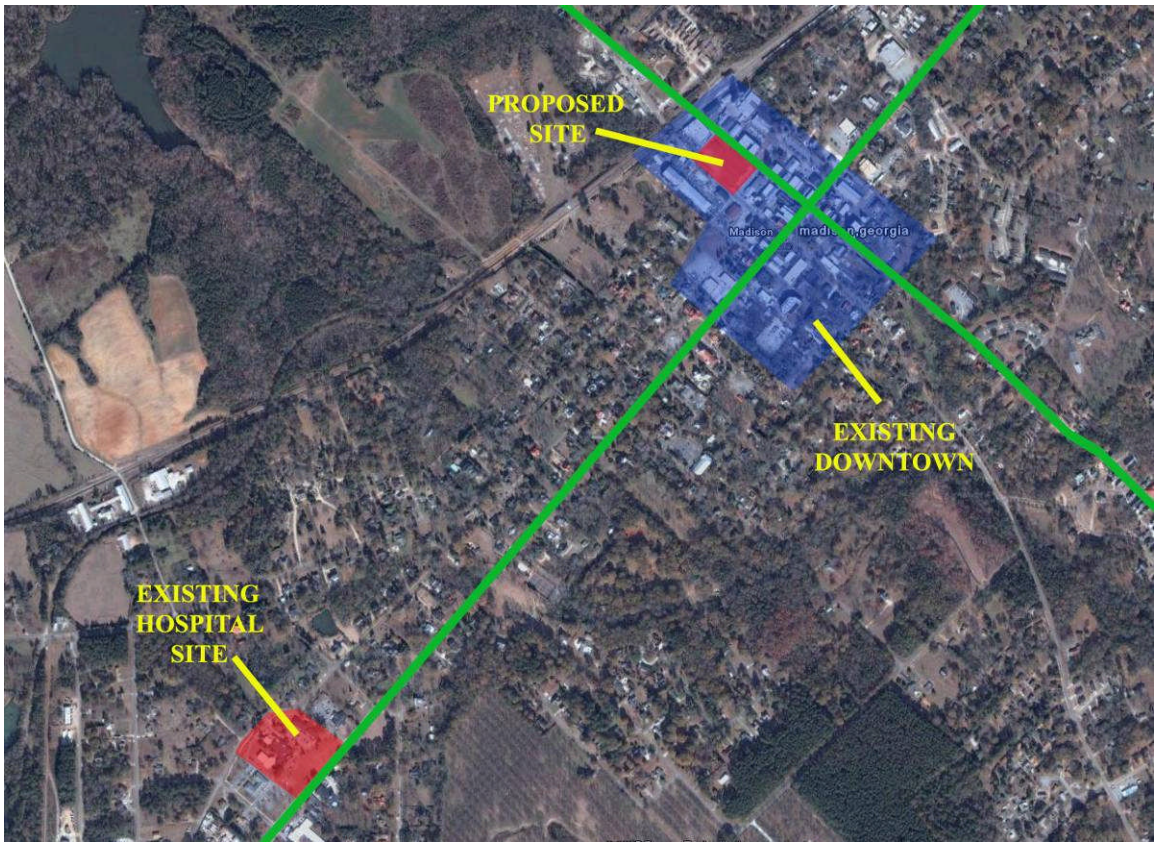


Figure 8.2 - Existing Town Plan

The Hospital

The local hospital, Morgan Memorial, began in 1957 with construction finally being completed in 1960. See Figure 8.3 – 8.5. This facility was created as part of a community effort under the provisions of the Hill-Burton Act.

Figure 8.3 – View of Existing Hospital from Main Road

Figure 8.4 – Front of Existing Hospital

Figure 8.5 – Existing Imaging Center

The hospital is currently licensed for 41 patient beds and currently offers 11 major healthcare services to its community. See Figure 8.6.

Figure 8.6 –Services Offered by Existing Hospital

The Site

Once the town had been selected the next task was to find a suitable site for the project. In surveying the town for sites that might be adequate for placing a hospital on in relation to size and location, there was one that immediately stood out above the rest. There happened to be a very large, vacant lot just one block off of the main town square. See Figure 8.7. This site is on a single block that is about 220 feet in width by 420 feet in length which, to give some perspective, is similar size to a New York city block. This site was also a perfect fit for this study because it did not involve a major demolition effort or massive relocation of the buildings currently housed there. See Figure 8.8.

Figure 8.7 - Existing Downtown Area

There are main roads traveling along each of the 420 foot sides of the site that run continuously all the way through town from one side to the other. This allows for more than adequate vehicular access to the new proposed hospital. There are also large sidewalks along three of the streets that surround the site which allows for adequate pedestrian traffic to access the site (Figures 8.9 – 8.12) Currently on the site there is a parking lot located on its southeastern edge (Figure 8.13), and a small artist's shop located in an existing house on the northern corner (Figure 8.14).

Figure 8.8 – Proposed Site

Figure 8.9 – View of Site Looking East

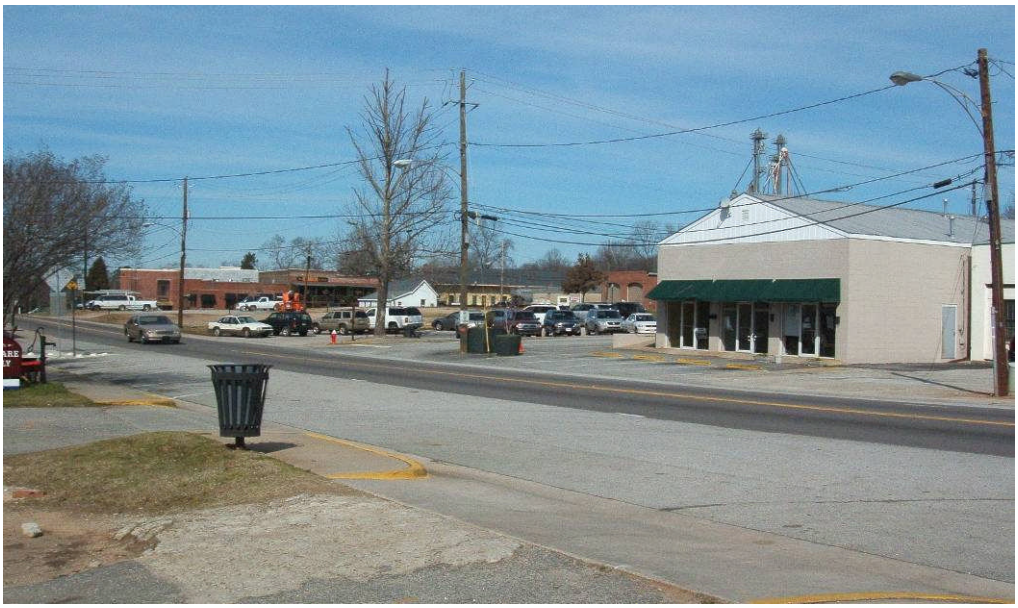


Figure 8.10 – View of Site Looking North

Figure 8.11 – View of Site Looking West

Figure 8.12 – View of Site Looking South

Figure 8.13 – Existing Parking Lot

Figure 8.14 – Artist's Shop

Contextually, the site is surrounded by low rise brick buildings that are typically one to three stories in height. See Figure 8.15. The site itself slopes up almost a full story from one side to the other in the short (220 foot) direction. See Figure 8.16.

Figure 8.15 - Existing Site Plan

Figure 8.16 - Existing Site Section

The site is fronted mostly by local shops on the northeastern and southeastern sides of the site (Figures 8.17 – 21).

Figure 8.17 – Hardware & Supply Store

Figure 8.18 – Café

Figure 8.19 - Existing Shops & Lease Space

Figure 8.20 - Existing Shops & Lease Space

Figure 8.21 - Existing Shops & Lease Space

On the southwestern side the site is adjacent to a new strip shopping center & spa (Figure 8.22), two new apartment buildings (Figures 8.23 – 8.24), and an existing funeral home/office building (Figure 8.25).

Figure 8.22 – Strip Shopping Center & Spa

Figure 8.23 – Apartment Building

Figure 8.24 – Apartment Building

Figure 8.25 – Office Building/ Funeral Home

To the northwest there is a restaurant, condos, and other specialty shops that are housed in an old warehouse facility (Figure 8.26).

Figure 8.26 – Restaurant, Shops, & Condos

Proposed Facility Program

The final program for this 35 bed hospital was created through a study of some similarly sized rural facilities combined with research and recommendations contained within this thesis. A full explanation of the study parameters and a fully detailed program breakdown by department of the proposed building are shown in Appendix E.

Table 8.1 – Proposed 35 Bed Facility Program

HOSPITAL PROGRAM	
DESCRIPTION	**AREA**
LOBBY	1,242
ADMINISTRATION	3,164
MEDICAL RECORDS	1,755
MATERIALS MANAGEMENT	1,364
LAUNDRY	1,404
MAINTENANCE	3,402
DIETARY	1,701
OUTPATIENT CLINIC	4,212
EMERGENCY ROOM	3,240
SURGERY	5,380
RADIOLOGY	3,568
OBSTETRICS	2,361
LAB	1,350
PHARMACY	999
PHYSICAL THERAPY	5,270
PATIENT ROOMS	18,711
	59,123

COMMUNITY FEATURES	
EDUCATIONAL CENTER	2,106
FOOD COURT	15,343
RETAIL	9,375
ART GALLERY	1,080
CHILD CARE CENTER	3,018
	30,922

Site Design

The first move made to begin this design was a purely urban response to the surrounding sites. The idea was to capture the edges of the entire site by pushing the

footprint out in all directions, leaving only a sizable strip for pedestrian traffic all the way around the building. See Figures 8.27 and 8.29. The goal was to replicate the low rise mixed use experience that currently exists on the streets that surround the site. This will allow the facility to create a direct interaction with the current context. Preparing as much of the current site as possible for future expansion within the current phase of construction will also help to save time and money at a later date, as well as relieve additional strain placed on the environment in the future.

Parking

In looking at the existing site section, it appears as though the elevation drops almost a full story from one edge to the other across the short direction of the site which allows for a subsurface area to be built on the northeastern side. See Figure 8.16. The logical decision for the use of this underground area is to house all of the parking for the building here. This decision is made to keep a greater portion of the site available for usable square footage in the current facility or for later expansion versus turning it into surface parking areas. Designing this portion of the building as a poured in place concrete structure allows for it to become a plinth, or solid base, that the main part of the facility can then be built on top of giving it stability.

Site Access

Both existing buildings adjacent to the property on the southeastern side of the site front onto the two main roads, not onto this parcel. This makes the road on this end of the site function more as an alley than a main street. There is currently an existing parking lot along this edge so this street is used to vehicular traffic coming and going. The current setup makes this side of the site the perfect location to house the service and delivery areas for this facility. The ambulance drop-off area will also be located on this side of the building due to this current condition.

Ground Floor Design

With the underground parking mentioned earlier already taking up most of the ground floor square footage, the task is to figure out what would be the best way to create a façade that is pedestrian in nature that can house some type of appropriate function for this side of the hospital. See Figure 8.27. Multiple tenant lease spaces are added along the ground level on this façade since there is no direct entry to the main hospital to deal with on this level. The underground parking will be entered into somewhere the middle of this block to help diminish the feeling of the building's overall length.

These tenant spaces do not have to be directly related to the hospital in any way. Because of this they have the ability to be self-sustaining and could be used for retail as well as food service to serve the surrounding areas, especially the existing apartments that are located directly across the street. One of the tenant spaces will be reserved for the Teaching Kitchen & Eatery so that passers by can stop in, take part in the learning experience, and catch a bite to eat as well. This space will span two stories vertically, moving up to an exterior garden/eating area on the main floor of the hospital. All of the building services (mechanical, electrical, & plumbing) will also be housed on this ground level to allow for continuous and easy access from the parking area for maintenance.

This entire portion of the building will initially be two stories, but expandable up to three. One of the main reasons for the multiple story height on this side of the building is to help shield the noise and sight of the service and delivery area from the existing surrounding buildings. The structure for this portion of the building will be a structural steel frame butted up against the concrete structure of the main hospital areas and parking. This decision will save money in terms of construction costs and will give this entire side of the building a structural base that can be easily altered or added onto in the future when a change or expansion is needed.

Figure 8.27 - Proposed Ground Floor Plan

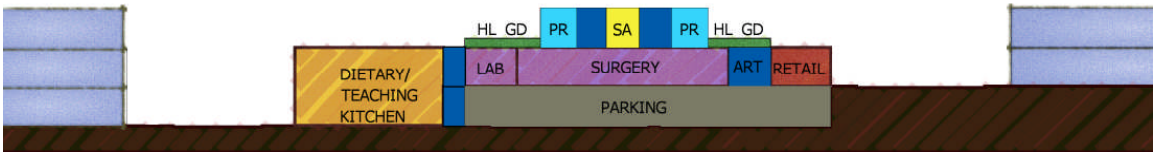


Figure 8.28 - Proposed Site Section A

Main Floor Design

One of the main goals on this floor, similar to the Ground Floor, will be to create a pedestrian building facade that mimics the mixed use buildings across the street to make this building feel and function less like a hospital and more like part of the existing community. See Figure 8.29. The idea is to try to diminish the scale of the building so that it can blend in better with the surrounding context. To achieve this there will be lease spaces lining the entire front of the building. The Educational Center will also be located along this pedestrian edge of the building with its own separate entrance in case this portion of the facility needs to be open and function when the rest of the building is shut down.

This floor will house the two main entrances to the facility as well as the Emergency Room ambulance drop off and a Mobile Radiology Dock. There will be one entrance mainly for hospital functions including emergencies and another mainly for community functions. Both entrances will reconnect inside the building by way of a long and naturally lit art gallery dedicated to displaying the work of local artists. Off of this corridor will be direct access to the main medical departments: Emergency, Radiology, Surgery, Obstetrics, a Clinic, and Physical Therapy. Also located off of this gallery will be rear entrances to the lease spaces as well as direct access to the Educational Center. There will also be a Child Care Center complete with an outdoor playground.

Diagrammatically on this level the building is set up in zones that run in long direction. These move from a public side where the two entrances are housed, to a more private side where spaces like the Laundry, Materials Storage, and Maintenance are located. The only exception to this is a large outdoor garden/gathering area that is open to the community for use. This entire design proposes to relocate as much open air garden space back into the facility as possible. Many of these will become elevated healing gardens that are directly accessible by the public and patients as well.

Figure 8.29 - Proposed First Floor Plan

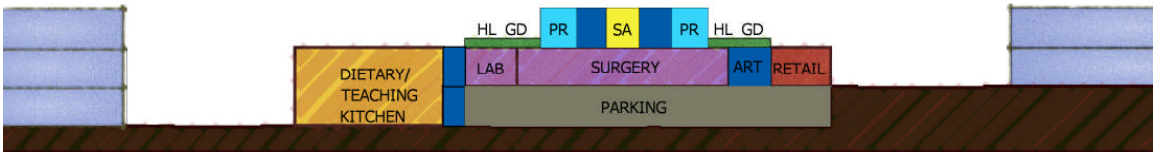


Figure 8.30 - Proposed Site Section A

Second Floor Design

The second floor is the Patient Room floor. See Figure 8.31. There are 31 single patient rooms at 250 square feet apiece located on this floor. There are also 4 ICU rooms at 420 square feet apiece. All of the rooms are located along the edges of the floor with each one having its own view to outside and all but 2 have access to a roof/healing garden that runs the length of the building down both sides. The nursing stations are located down the central core and are evenly distributed throughout to keep the nurses closer to their patients and reduce the amount of foot travel that they have to endure every day.

Building Expansion Design

According to the overall plan for expansion of this building, at least 34,000 square feet can be added without adding any more floors to the building. This is an important aspect because we want to keep the height consistent with the surrounding context. This is one of the main aspects of design that has to be considered and implemented when using a constrained site.

The exterior garden areas on the main floor, totaling around 10,000 square feet, are built on a pre-designed structure. Because of this design the hospital is able to expand into these areas for future uses if they need to.

The plan for the expansion of the second floor is to mirror the current patient wing across the central healing garden. See Figure 8.33. In doing so, the patient rooms can double in number while still giving every room a direct view of the outside. This approach adds another 24,000 square feet of usable space to the overall floor plate. Additional healing gardens are constructed to fill in the additional space that does not have a programmed use at the time of expansion. Future expansion is then available within these additional areas if needed.

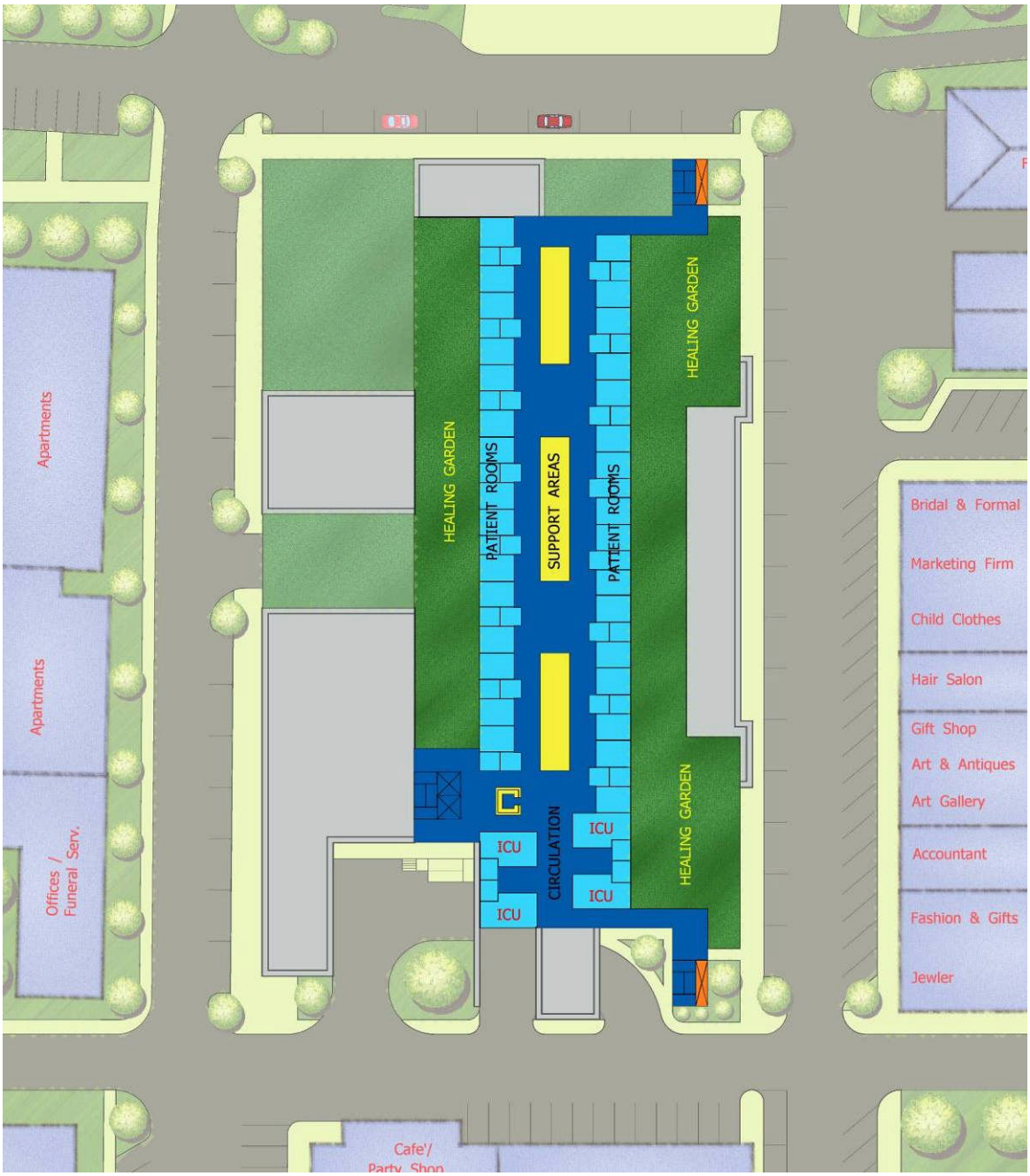


Figure 8.31 - Proposed Second Floor Plan

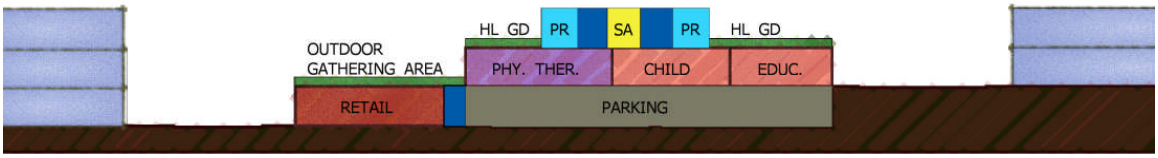


Figure 8.32 - Proposed Site Section B

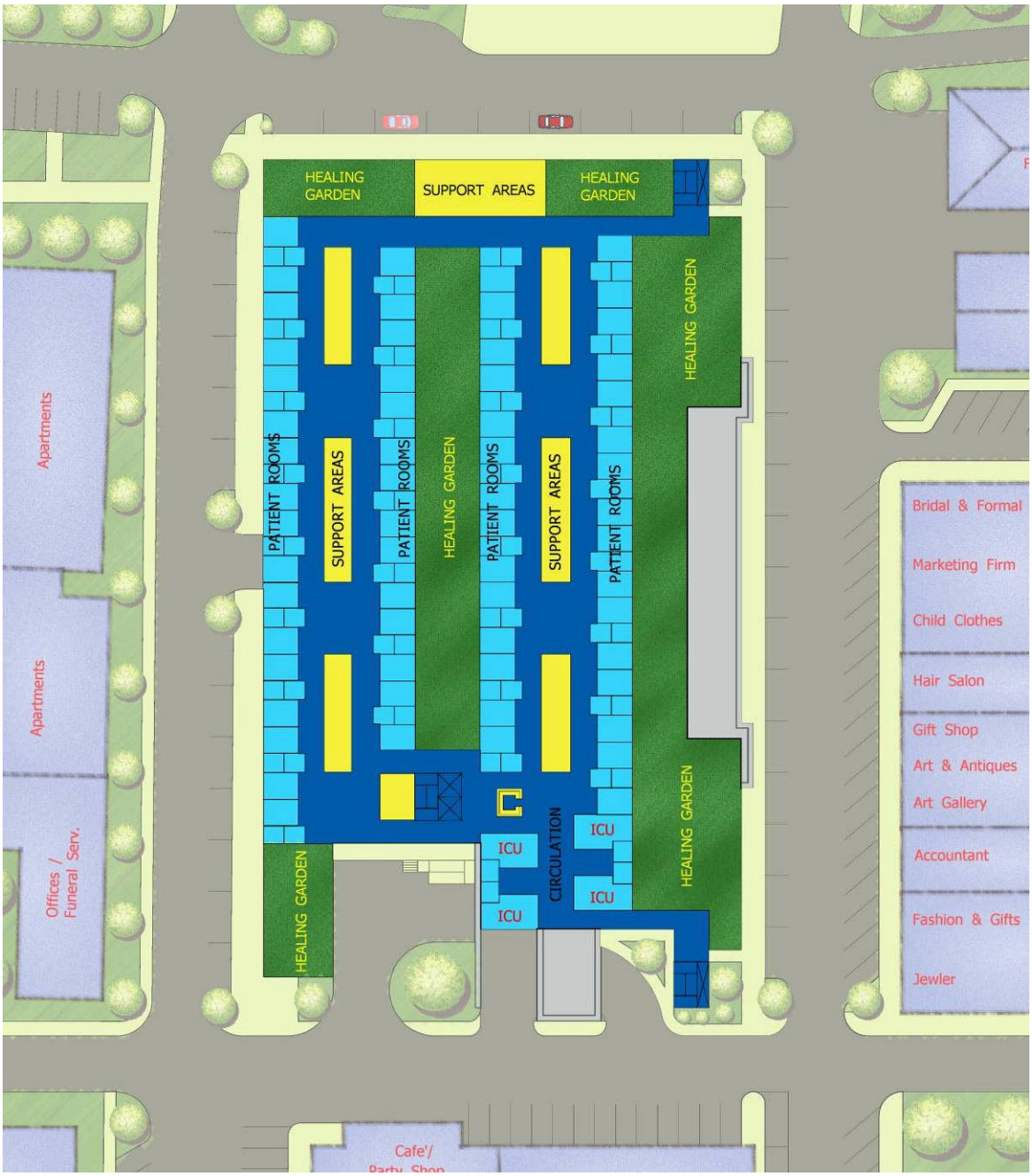


Figure 8.33 - Proposed Future Second Floor Plan

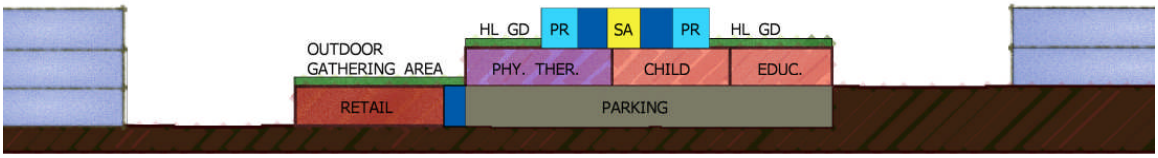


Figure 8.34 - Proposed Site Section B

PART FOUR: TESTING

SUMMARY

- The ideas of community building and town revitalization are areas where the hospitals have a chance to make a change. Most of the benefits of an in-town site were related to these two ideas.
- Urban design concepts and considerations about controlling sprawl generally rank lower on an overall importance scale within these smaller communities.
- Costs and size are major issues when planning a new facility.
- Physical and spiritual health, Healthcare Education, and public gathering are important factors within the concept of integrated community features.
- Lease spaces should be hospital or physician related.
- In relation to the recommendations proposed within Chapter 6 of this thesis about services offered, 8 out of 10 services had a consistent showing as being recommended for one of these facilities in all surveys.
- Evidence-Based Design is a growing field of interest and implementation within the healthcare community.
- Facility expansion is a huge topic when considering a constrained site
- Properties peripheral to the hospital site and who has control over them is an important issue because it can have a huge effect on the overall development of the area.

CHAPTER 9

INTERNET-BASED RESEARCH SURVEY

An internet-based research survey was administered as part of this thesis research project to gather information from healthcare management professionals and healthcare designers in charge of making decisions about new healthcare facilities. It was aimed at understanding the practicality of relocating small town hospitals onto in-town versus out-of-town sites. Many rural hospitals are built on sites that are outside of town for financial reasons as well as the availability of land. Constructing the facility on an in-town site could provide an important economic and community boost to the existing downtown area.

Web-based links to the survey website were emailed out to a pre-selected group of 110 study participants. See Appendix F for the full survey. The number of response submissions was not as abundant as anticipated. Twenty-three (23) surveys were completed over the internet and then electronically submitted to the project team. The study information from these surveys has been collected and the data from the completed surveys will be analyzed within this section of the thesis and compiled into usable forms of representation. See Appendix G for the full results of the survey.

Study Demographics

The field of respondents that participated in the survey is broad and effectively varied in its make-up. Four of the participants did not specify their profession, but out of those that did, the majority of the participants surveyed (57.9 %) are hospital administrators (11 of 23). The second largest group of participants, both at 10.5 %, are Architects/Designers (2 of 23) and Healthcare Consultants (2 of 23). The field is then rounded out with one hospital association director, a physician, a hospital facilities

manager, and finally a member of the general hospital staff from one of the participating facilities. The breadth of this make-up is advantageous to this study because it gives us many varied opinions from different people that interact with each other and these facilities in different ways every day within these small rural settings. The people vary from those in charge of its design to those instilled with controlling its use and upkeep.

Design & Construction

In regards to the issues of hospital design and construction, this participant group also offers a good segment base to poll:

- 70 % of the respondents surveyed (16 of 23) currently have a project of some kind either under construction at their facility or they are currently in the planning stages for a future project.

- 43.5 % of the participants (10 of 23) are currently in the planning stages of either a renovation project, an addition to their hospital, or a full replacement hospital.

- 26 % of the participants (6 of 23) currently have one of the project types listed above under construction at their facility.

These numbers are important because it expresses the impact that this research could possibly have on these projects.

In-Town Site

This section of the survey was concerned with accessing and analyzing the potential benefits and potential problems that arise when trying to locate one of these rural facilities on an in-town versus out of town site. The respondents were given 15 potential benefits and 15 potential problems associated with using an in-town site and were then asked to rank each of them on a scale from 1 to 10 in terms of their perceived

importance involving the matter at hand. A ranking of 1 would be the least important to a ranking of 10 being the most important.

Potential Benefits

In this section of the survey, the top ranked perceived benefit (average importance rating of **8.26**) of using an in-town versus out of town site is that it re-invests the hospital as an integral part of the town and local economy. Ranking slightly behind this (average importance rating of **7.74**) is that using an in-town site locates the available services closer to the populated area of town. This benefit was the also the item with the most votes for an importance rating of 10 out of any of the categories (5 votes). This is followed by the potential for hospital related business to reuse existing empty tenant spaces in existing buildings surrounding the new hospital site (average importance rating of **7.57**). The top five benefits are rounded out with the new facility helping to build the social capital of the town, and finally, being able to share the costs of construction for the new facility with the town ranked fifth (both of these have an average importance rating of **7.00**).

Potential Problems

It appears from the study results that the most significant problem in relation to an in-town site is the restricted or constrained site size that is usually associated with it (average importance rating of **8.30**). This problem was also the item with the most votes for an importance rating of 10 out of any of the categories within this section of the survey (7 votes). Ranking slightly behind this (average importance rating of **8.10**) is the ability to provide adequate on-site parking for people using the facility. This is followed by the problem of having a restricted or constrained facility size due to the constrained site (average importance rating of **7.90**). The top five problems are rounded out with the problem of how the services offered are affected or altered if the size of the site and

building are restricted (average importance rating of **7.30**), and finally the problem of more expensive costs for land in town ranks fifth (average importance rating of **7.20**).

Some additional items not listed in the survey that participants noted as problems to consider include the impact of the facility on adjacent lands. It was noted that this problem could spread into rezoning of surrounding residential areas for support businesses for the hospital, degrading the current character of these areas. This movement could also displace families through land sales or the use of eminent domain which could cause friction within the town. Another problem that was mentioned that needs to be considered is planning for growth, expansion, and response to market changes within the new facility.

Community Features

The rural hospital has an opportunity to help fund new construction and redefine itself within the community by instituting a much broader program than would necessarily be required from an urban hospital serving a similar size population base. We need to look at how to combine these items in ways that are beneficial to both entities through shared land and construction costs. By broadening the scope of its program the hospital will help to increase the overall interaction between the caregivers, the patients, and the families turning the hospital into a truly communal facility.

This section of the survey was concerned with determining what portions of the community contain overlapping functional and spatial requirements with current hospital functions. Participants were asked to select services from a given list that they would try to institute a one of these proposed 35 bed facilities. The results of this portion are shown in Table 9.1.

Table 9.1 – Survey Results on Community Features Recommended

Community Features	Percentage of participants that recommend offering it
Fitness Center	**78.9** % (15 of 19)
Chapel	**78.9** % (15 of 19)
Conference Center	**73.7** % (14 of 19)
Retail	**68.4** % (13 of 19)
Food Court	**57.9** % (11 of 19)
Daycare Center	**57.9** % (11 of 19)
Outdoor Park	**52.6** % (10 of 19)
Teaching Kitchen	47.4 % (9 of 19)
Library	42.1 % (8 of 19)
Event Facility	42.1 % (8 of 19)
Art Gallery	36.8 % (7 of 19)
Spa	26.3 % (5 of 19)
Museum	10.5 % (2 of 19)
Game Room	10.5 % (2 of 19)
Hotel	10.5 % (2 of 19)
Movie Theater	5.3 % (1 of 19)

The results for this section of the survey generally played out as expected, except for one surprising category. The top 2 performers within this section of the survey, both scoring at 78.9 %, were the Fitness Center and the Chapel. It appears that even in small towns, the aspect of exercising the body and mind still holds a vital place in people's perspectives of true health.

Services

This section of the survey was concerned with trying to determine a scope of services that can be appropriately offered by the facility proposed earlier in this thesis, a 35 bed facility serving a town size of 4000 people. The goal is to try to determine correlations between community size, facility size, facility costs, and services offered.

The following is a list of the services from Chapter 6 that is recommended by this thesis to be offered at one of these proposed facilities:

- In/Out Surgical
- Lab (Clinical)
- Radiology
- Emergency Department
- Respiratory Care
- Pharmacy
- Dietary
- Pediatric
- ICU
- Physical Therapy

The survey respondents submitted recommendations for services that they thought should be offered at this type of facility. Their recommendations are listed below in Table 9.2.

Table 9.2 – Survey Results on Services Recommended

Services	Percentage of participants that recommend offering it
Lab (Clinical)	**100 %** (19 of 19)
Pharmacy	**100 %** (19 of 19)
Radiology	**94.7 %** (18 of 19)
Emergency Department	**94.7 %** (18 of 19)
Respiratory Care	**89.5%** (17 of 19)
In/Out Surgical	**89.5 %** (17 of 19)
Dietary	**89.5 %** (17 of 19)
Physical Therapy	**68.4%** (13 of 19)
Obstetrics	**52.6 %** (10 of 19)
Nuclear Medicine	**42.1 %** (8 of 19)
Pediatric	42.1 % (8 of 19)
ICU	36.8 % (7 of 19)
Disease Management	5.3 % (1 of 19)
Tele-Medicine	5.3 % (1 of 19)

Evidence-Based Design

This section of the internet-based survey was created to determine the overall concern within the industry of what a "current and adequate" healthcare facility needs to contain in terms of implemented Evidenced-Based Design (EBD) research features. As mentioned previously in this thesis, much of the research involving these ideas focuses on the impact of quality, safety, and the built environment on patients, families, and staff. Only 19 out of the 23 participants submitted an answer to this section of the survey.

A surprising number of these participants expressed an interest of some kind, or some general knowledge about, the principals of evidence-based design:

- 63 % of the participants (12 of 19) stated that they have a previous knowledge of and fully understand the ideas related to this topic.

- Over half of the people that participated in this section (10 of 19) submitted that they would definitely incorporate these features or would at least consider incorporating them into one of their future facilities.

- 37 % of the participants (7 of 19) stated that they have a true interest and would like to learn more about this particular subject in regards to facility planning and design.

- 10.5 % of the participants (2 of 19) stated that they know and understand the concepts but have no interest in implementing them within a new facility.

- 10.5 % of the participants (2 of 19) stated that they no opinion about the subject at all.

Related Issues

This section of the survey was designed to elicit additional thoughts or issues from the survey participants about using an in-town versus out of town site that were not directly listed in the survey materials. Some of their comments are listed below.

- Physician Offices – some physicians have already invested in offices close to the current facility and may be reluctant to support moving the hospital.
- Available real estate for peripheral uses is critical.
- Being able to locate physician offices in existing surrounding buildings adjacent to the new hospital site.
- Eminent Domain could be a valuable ally in this revitalization effort.
- There may be federal funds/grants for redeveloping blighted downtown areas which could help with the construction costs of the new facility.
- Hospital zoning control of properties that surround the new site.
- Ability to have a multi-block hospital facility.
- Long term options for growth of facility and services.
- The hospital's impact on other nearby hospitals.
- Hospitals impact on roads and traffic in the area.
- Correlation between the new hospital location and other planned patterns for the evolution of the town (shopping, recreation, etc.).

- Consideration of having all health services located in one central area.

Conclusions

Potential Benefits

The top scoring benefits associated with the use of an in-town site all have to do with the idea of community building and the aspect of helping each other. This is one of the ideals that is typically present in these types of areas. By moving the hospital into town people like the fact that it will be closer to the populated area, that it will invest itself in the town, that it will bring parallel businesses with it to nearby vacant spaces, and that the town could help the hospital with the cost of the facility.

It also appears from the survey responses that issues involving urban design concepts and considerations about controlling sprawl generally rank lower on an overall importance scale within these smaller communities. The 4 potential benefits primarily associated with these issues had the lowest overall rankings within this section of the survey. This probably is attributed to the fact that many people in these smaller towns have a different perspective when it comes to the design of towns and their structure. One response that is very startling regarding a particular urban design aspect is that the potential benefit of promoting physical activity/walkability by a healthcare facility was given an importance factor of 5 or less by 13 of the 23 respondents. This issue must be addressed by healthcare facilities in general to help promote a healthier way of life for their residents.

Potential Problems

Most of the top scoring problems in this section were associated with size and costs of the facility. With their rankings, many of the respondents made it clear that these issues are the most important factors that they think about in relation to moving the

hospital into town. They are worried about the overall design of the site, and if there will be adequate space for their building, for expansion, as well as room for on-site parking.

Some surprising results were that the problem of potential noise created by the new facility was the lowest ranking item within this segment (average importance rating of **4.45**). The other surprising item was that the lack of visibility of the facility from a main circulation route was the second lowest ranking item (average importance rating of **5.68**).

Community Features

Of the two highest scoring community features, the Fitness Center and the Chapel, neither was initially proposed within the design project contained within this thesis. These would be two features that apparently need to be included into one of these facilities. The teaching kitchen and the library both scored lower than expected but still ranked within the middle of the pack.

The most unexpected showing in this section came from the idea of integrating a Conference Center into one of these rural healthcare facilities. A surprising number of participants, 73.7 % (14 of 19), stated that they would incorporate this feature into a facility that they were designing. The idea of lease space for Retail and Food Service was actually expected to be near the top of the list, ahead of the Conference Center, but it was not.

Services

The majority of the results are fairly similar to the recommendations proposed within this thesis. The two services that scored somewhat lower than expected in their result totals were Pediatrics and ICU. The two services that scored higher than expected were Obstetrics and Nuclear Medicine. There may need to be some revision to the

typical proposed services for these smaller facilities based on result of these numbers compared with the hospital database survey performed in Chapter 6.

Evidence-Based Design

Only 21 % of the respondents (4 of 19) stated that they had no intentions of incorporating Evidence-Based Design principles and features into their future facilities. The good news is that 79 % of the respondents (15 of 19) stated that they were interested in the benefits associated with this line of research. This means that there is a good chance that some of these proven beneficial features could find their way into some future facilities. Certain features should be planned for initially within these facilities and then only taken out as a last resort if the financials will not work.

CHAPTER 10

INTERVIEW SURVEY

The interview based research survey that was administered as part of this master's thesis research project was intended to gather information on understanding the practicality of relocating small town hospitals onto in-town versus out-of-town sites. A full copy of the interview survey is included in Appendix H. This portion of the research consists of several 1 hour interview sessions concentrated on evaluating the proposed 35 bed rural hospital design that was created as part of this thesis research. The sections included within this chapter are the summarized responses that were given by the study participants.

Interview 1 - Hospital Administrator: 122 Bed Facility

The first interview survey that was administered involved a current hospital administrator from a small town in South Georgia. The facility that this individual runs is currently beginning plans for a brand new hospital to replace their current facility. Although the facility involved is on a larger scale than the ones this thesis is proposing, the town is of a smaller scale that is directly in line with this research.

General Thoughts

It was very adamantly stated that the hospitals in these small towns have to be the agents of change within the community. They are usually one of the only entities in a town that is actually large enough to try to make the types of changes needed to improve the overall health of the community. It is about serving the greater good. These hospitals have to make sure that temporary solutions do not override their long term goals for their community. They have to be able to continually make a contribution to society and not a deduction. The largest problem with these ideals is that these small hospitals are highly

risk averse and cannot take as many chances as other healthcare facilities in other areas of the country.

This is why the goal in any small town should be to try to create a community consortium that would be charged with community wellness, access to healthcare for the indigent, and health education for indigent people. Many of these items are unachievable unless there is a large, self-insured local industry that wants to make a change, community leaders that are dedicated to making their town a better place to live, and possible grant money from the government. The town itself can help support this effort through Special Purpose Local Option Sales Tax (SPLOST) placed on the town or bonds that are backed by the local government.

Hospital Services

In regard to the service offered within the proposed design, this participant felt that the Administration area did not include enough square footage for the number of individuals that would actually be working within the space. It was proposed that the Laundry facilities be removed from the building program because most of these services are usually contracted out to another business in the area. This organizational move is beneficial to the community because it would create additional job opportunities for a local business that serves the hospital. The space that was originally allocated for the Laundry could then be given to the Administration area increasing its overall size to around 4,500 square feet which would be sufficient.

The next issue involving the services centered on the inclusion of space for Obstetrics within the facility. It was recommended that this not be considered a standard service offered by one of these rural facilities because its viability can vary so much from town to town depending on the population base. An additional feeling was that a physician would be reluctant to be the sole practitioner providing these services to an entire town. There would be issues when that individual was out of town or unavailable

that would require people to have to travel to another hospital for treatment. If this service is going to be offered, it should have at least two physicians involved with the practice. If this service is not offered, the space allocated for it could be deleted from the overall facility program.

In terms of the new practice of tele-medicine services, this participant felt that the more services that you are able to adequately offer to care for your community builds support and buys you credibility within the town. Many of these types of services are available now that do not create a dramatic financial impact on the facility. Dermatology would be a specific service that would be beneficial to offer in this new way because you would not have to build or allocated specific space within your facility for it, it could be done right in the Clinic area. These services should not be a blanket mix, but should be specifically tailored to the constituent make-up of the overall community on a town by town basis.

Supplemental Services

In regard to supplemental services provided directly by the hospital for the community, the one that ranks at the top of the list would be health education. A good education program would help to keep the occurrence of many types of abuse lower in these rural areas. Many of the individuals in these areas smoke, drink alcohol, and fight whenever they feel like it, always expecting the hospital to be there to take care of them. Teen pregnancy is also at an all time high in these areas. If these people were educated on how to live a safer and healthier life it would benefit the entire community. The main problem with this goal is that these are the people that do not want to be educated about such things.

For the hospital, it is important that they have expertise in managing these supplemental services so that they have an overall positive impact on the community. The largest question for them to answer is how to track the impact of these services.

Much of the extra Emergency Room work that these facilities perform regarding these abuses above is viewed as community charity work by the hospital staff. There has to be a way to change the avenues where this additional time is spent into a more direct and purposeful way within the community.

Community Features

Features provided by the hospital specifically designed for direct community involvement are beneficial, but the most important question to answer is which ones you should try to provide. In terms of financial considerations, out-parcels located on the periphery of the hospital site would be more beneficial to the hospital than lease spaces that they have contained within their facility. These parcels would work to the hospitals advantage in two different ways; they could keep them under their control by instituting restrictive covenants, and because they do would not have to pay for the initial construction of these outlying buildings.

If lease spaces were built and leased out by the hospital, then these spaces would need to contain less generic tenants and more hospital related parallel businesses. Examples of these would be a pharmacy, a Durable Medical Equipment (DME) dealership, or possibly even a flower shop. The most beneficial use for the lease spaces would be as physician offices. A condominium type of setup for these spaces would be the best type of scenario in this case because it would, in a way, create a direct financial investment in the hospital by the physicians.

Building Design

<u>Vision</u>

The hospital itself needs to stand out from the surrounding buildings. The idea of blending it into the context is respectful but the facility needs recognition. The vision of a new facility should create something in the community that is notable and that is able to

be admired. Its presence should relay the message that the hospital is successful and confident in their abilities. The image should speak of a higher technical capacity and medical competence. It should also evoke a feeling of a higher quality of care.

Parking

In terms of parking, covered parking is a benefit to any facility and a good idea because it helps to keep people out of the elements. The drawbacks for this decision are that it has a much larger up-front construction cost addition and that it is less effective in terms of the first floor expansion abilities of your facility. The first of these is purely a financial matter, can one afford to build it or not. The later of these can be a more mute issue depending on how the facility is actually laid out on the site.

Structure

There is a vast difference in the construction costs for hospital construction compared to educational spaces or other tenant type lease spaces like retail & food service. For this reason it would be financially important for the project to determine adjacencies of spaces. The next step would be to figure out how to design the facility to accommodate both types of construction, based on these adjacencies, on the same site to save money in construction costs. This way the entire facility would not have to be built up to hospital standards at hospital type costs.

Expansion

In relation to expansion, the one comment was that many of the hospital functions such as Administration, Medical Records, and Pharmacy, could be relocated up to the Patient Floor to allow for more usable space for expansion on the main hospital floor. None of the actual hospital services should be moved up to this floor though, for privacy reasons. There also need to be plans made for a future second entrance on the parking deck entry side of the building because it would be beneficial to be able to enter the

building from both sides. Whatever spaces are changed during future expansion and renovation, an important idea is to remediate whatever spaces possible for community or public use.

Interview 2 - Former Hospital Administrator: Multiple Facility Sizes

This participant has worked in the hospital industry for over 30 years. He most recently held the position of hospital administrator at a larger hospital in a town in Central Georgia. He has also managed some smaller rural hospitals in North Carolina during his lengthy career.

General Thoughts

The main idea of town revitalization is a great cause. This participant has actually managed a few facilities in rural communities that tried to buy up land around the hospital and redevelop it to help restore parts of the town surrounding the hospital. One idea that was seen by this individual in another community was the addition of a small university directly near the hospital. This institution started a nursing school which was then able to work in conjunction with the hospital on a daily basis towards the betterment of both entities.

Another important aspect of hospital design is the idea of adding more natural light into these facilities with skylights and clerestories. This can occur in OR's, ER's, hallways, and patient areas and is considered a great attribute to the facility and possibly a marketing tool for convincing physicians to come work there.

Hospital Services

There were two areas that were noted as being large in terms of their square footage allocations in the building program. The Physical Therapy department was noted as being about twice the size 54 needed for a facility this small. The Patient Rooms are

currently around 250 square feet individually and the thought was that these could be made slightly smaller, maybe closer to 200 – 220 square feet each.

Another item related to the Patient Room floor was the location of supplies and nurse stations since the plan is a long, shotgun row of rooms on each side of the floor. Grouping the rooms into sets of two and allowing for a small charting area as well as utilizing a Friesian Med/Surge supply delivery system that would allow the storage of some supplies in these areas would cut down on the amount of walking that nurses do per day. This is a large item of concern considering the aging nursing population. Nurse stations should be dispersed evenly throughout the floor to also help cut down on daily travel. Finally, two central nurse stations should be located on the floor, one on each end, complete with a few small meeting rooms for staff meetings and family consultations.

Supplemental Services

The introduction of a child care center into a rural hospital this small is considered a questionable move. These facilities typically do not make money because unless parents work in the immediate area they are not willing to drive their children all the way into town for them to attend daycare. They usually want a facility that is closer to their home. The town also needs to have a large number of younger child-bearing age women to make this type of feature even possible. It would be possible to include one of these centers into a facility like this but it would need to be recommended on a case by case basis.

Community Features

Community gathering spaces or convention spaces built into one of these facilities would be excellent, versatile features that could increase the daily use of the facility by the community. Lease space for the community would also be a good item to offer to the community in one of these facilities, provided that the tenants that locate into these

spaces are related to the hospital in some way. This should be a requirement for these particular spaces.

As one of these lease spaces, the teaching kitchen is a nice addition to the area, but this, along with some other community features, could be located somewhere off site for a more reasonable cost than having it constructed as part of the physical hospital building. The thought of nice restaurants in general, possibly incorporated into the town fabric inside this facility, would be a nice addition to the town. This would especially be true if there are not currently and good places to eat nearby.

Building Design

Site

The urban design response that was made by this thesis in this initial design to push the building to the edges of the site to maximize the buildable footprint was considered inappropriate by the participant. A building utilizing this approach would make people in the town feel more cramped and uneasy. It would seem as if they were in a bigger city and not their home town. These people tend to enjoy more open spaces so the building should accommodate as much open area for the public as possible.

Vision

If the building was pushed to the edges of the site as in the proposed design, the main feeling was that integrating the hospital into the local setting and blending it in with its surroundings would be the right way to design one of these facilities. An example given was the Villages development in Leesburg, Florida. The hospital there was referenced as a facility that is completely integrated into its context.

Most people in town know where the hospital is and are more concerned about the care they will receive there than what the building looks like. If the building looks expensive it may actually upset some residents. Even though it should stick out from its

surrounds as little as possible, it should have pronounced and distinctive entrances with adequate signage letting people know where to enter into the hospital.

Access

Too many entrances can be costly and a security risk to the facility. The building should have fewer entrances and a better wayfinding system in place to direct people within the facility. If there are two main entrances as in the proposed design they should be separated into a community entrance for general building activities, and a healthcare related entrance that can be open and monitored 24 hours a day. The community entrance should have the ability to be locked and closed during off hours to cut down on security costs.

Parking

The participant posed a question about whether or not a parking deck worth the additional cost. His feeling was that most rural residents prefer being in open spaces and that most of the town residents probably will not even use the deck if it is built. The feeling was mutual when asked if this would also apply to employees of the hospital if this underground parking was dedicated for employees only. The recommendation made was to have surface parking if possible.

Structure

An issue involving costs lies in the relationship between hospital and non-hospital features within the building. The cost of hospital construction is higher than typical commercial construction. A valid question is should all areas within the facility be constructed up to this standard of "healthcare ready" for lack of a better term. This would increase the amount of usable space for expansion and renovation with less cost in the future, but there will be a higher initial construction cost for the entire facility based on this decision. If there is a plan to expand a healthcare occupancy over top of another

type of occupancy as in the proposed design, the main question is can this be done or will it be allowed by the building department.

Another cost related issue that is involved with the structural makeup of the building is the inclusion of roof gardens or roof terraces. These spaces are great to have if you can afford them but they require a lot of maintenance. The annual upkeep of these spaces can be very expensive and is usually the most expensive aspect of having one of these spaces in your facility. Sometimes towns can get the local garden club to come take care of them for free which helps out the hospital greatly. There are also water infiltration issues associated with these outdoor spaces that will cost facilities extra money up front for addressing this problem.

Expansion

Future construction costs are a major item to consider when planning a facility. In considering future facility expansion, the two departments that should be moved or expanded as a last resort due to cost issues are Radiology and Surgery. These are the two most expensive departments in terms of construction and equipment costs to build.

The plan for expansion of the Patient Room floor of the proposed facility seems very reasonable except for the unanswered question about adjacencies or overhangs in the above section. If the floor is expanded in the proposed way, it is recommended that 2 more ICU units need to be added. The expansion would also need to have consideration given to psychiatric patients who are typically housed on the Med/Surge floors with the other patients and are becoming a problem for some communities. Outdoor access and security procedures would need to be updated or put in place if roof gardens are accessible by the patients on this floor.

One alternative method suggested for future expansion instead of the one in the proposed design was for the hospital to buy land on the other sides of the streets adjacent to it. This would give the hospital the ability to expand to multiple blocks instead of just

one single block and a single building. If a need arose then some cities may allow for the closer of some streets if the hospital owns the property on both sides. This tactic would actually give the hospital more land to build on without them having to actually purchase the land.

Interview 3 - Architect: Healthcare Design Firm

This participant has over 20 years of healthcare design experience in projects ranging from hospitals to long term care facilities. He is currently a principal in an architecture firm based in Alpharetta, Georgia specializing in healthcare planning and design.

General Thoughts

The general premise of combining healthcare functions and public functions into one facility that benefits the community, while deinstitutionalizing the stereotype of the hospital, is an idea with merit. It is a socially responsible and commendable move if the economics of the situation are able to be overcome but this will be hard to achieve in these small towns. The makeup of the peripheral properties surrounding the hospital site will have a lot to do with the eventual viability of this type of project. It is a shear battle against economics in this case.

Hospital Services

Within these services offered by the proposed facility, there are a few that need adjustment and additional considerations before they are included as a basis of design for these rural facilities. The Physical Therapy department square footage seems to be a little larger than it needs to be for a facility this size. The typical circulation factors that are added to departmental square footages could be reduced in percentage for this particular department which might bring the size closer to what would be recommended.

Many people feel that there is a stigma attached to the hospital itself, and if given a choice, would tend to go to a non-hospital facility for treatment versus actually going to the hospital itself. In regards to the Outpatient Clinic included in the design, most of the outpatient services provided by a healthcare system are typically done in an off-site facility. These services are usually housed in a nearby medical office building which allow for more flexibility in the design as well as a broader pallet of acceptable finishes. The construction of these buildings is also usually less expensive than the hospital because many of these services housed there can be considered a business and not healthcare occupancies. Some typical hospital services that are located off-site are Radiology & Lab.

For the Inpatient business of the facility there would still need to be Lab & Radiology departments within the hospital, but they could end up being much smaller than what is currently shown. If all of these features are strategically planned to remain within the hospital, then the currently programmed sizes are adequate.

A preference would be to offer part-time on-site services instead of services offered through tele-medicine. This is a market preference because a relationship with a live doctor is common in these smaller towns. This relationship would also benefit the hospital because if the business in the area increases, then the physician could possibly come to work for the hospital full time since there is already an existing relationship there.

Community Features

In terms of the best case scenario for the hospital, lease spaces are good to offer to a community, only if they are healthcare related. These facilities will not typically make money by providing generic multi-purpose lease spaces. They will usually break even on these types of spaces. For the community, lease spaces that could be used for multiple

purposes would be beneficial because it offers freedom for the area around the hospital to grow more organically like a traditional neighborhood.

Building Design

Site

The response of pushing the building to the edges of the site is the appropriate response when working within a block structure, no matter whether it is in an urban or rural setting. This response helps to maximize the usable space for the facility which is constrained by the surrounding streets. The typical scenario of street, sidewalk, and then building works well in most block structured settings. Although this move makes the building larger in footprint size, the scale of the facades can be used to decrease the overall feeling that the building is larger than it should be in relation to the context.

Vision

The building itself should not be an iconic sculpture within a landscape, but it should not disappear into the backdrop of the town either. It should be designed to work within the block structure of the town, similar to the surrounding buildings, respecting and responding to its contextual elements. At the same time though, it should remain unique in its appearance, defining its own version of its surroundings so that it can stand out from the other buildings and pronounce itself in some particular way. It is very important that this response not upset the current feeling and arrangement of the town.

Access

Two main entrances to the building, one dedicated to healthcare and one for community functions, is a nice way to separate the pedestrian traffic entering into the facility. The ambulance and service areas on the south side of the site work well also in relation to the existing use and condition of the road there.

Parking

If an in-town site is selected then the probability that the parking will end up in some sort of deck structure is almost a given due to the restrictive nature of the block structure found in these areas. Suggesting this type of parking would be the responsible recommendation to make to a client in terms of their ability to maximize the use of their property.

Structure

If the plan is to construct the facility as one singular building, separating the uses and features within it into different areas that then can be built out of different construction types would aid in lowering overall construction costs. Designing the facility to be built to the edges of the site with a structure that can be easily expanded vertically and horizontally is also an environmentally responsible approach to design that should be sought out. This decision to pre-plan for the future also limits the downtime for the facility during future construction periods.

Expansion

The layout of the Patient Floor as a straight run of rooms versus a pod configuration works well for this particular design. This approval is dependent on the idea that the nurse stations will be evenly dispersed throughout the floor and not centrally located. This layout allows for easy repetition that can decrease construction costs and easy replication and expansion of the floor to the other side of the healing garden. The incorporation of healing gardens in general is also a benefit for the patients and for future expansion if additional space is needed for the facility.

One aspect of expansion or development that needs to be considered is the evolution of the peripheral properties that are adjacent to the hospital site. Market trends suggest that healthcare related businesses will migrate to these sites, eventually encircling

the hospital in a complete “medical ring.” To avoid this and keep the existing aspects of the neighborhood in place the hospital needs to gain control over zoning and development in these areas. It could become a Healthy Living District, dedicated to healthy living, socially and physically. One of the goals would be to keep access to the area open to other business, other than healthcare related, to help promote a mixed use/ New Urbanist style development.

PART FIVE: REFLECTIONS

SUMMARY

- In-town hospitals are a viable option for the betterment of the overall community.
- Costs are a significant issue for these small facilities but these problems can be overcome through careful planning and intelligent design.
- The building should be pushed out to the edges of the site and the facades of the building should be lined with publicly interact able spaces
- Parking should be concealed and housed in parking decks
- Development control of properties peripheral to the hospital site is an important topic to consider
- Buildings should be pre-designed to be expandable
- There are 8 main healthcare services that should be provide by an in-town rural hospital to its community.
- There are 5 community features that should be incorporated by an in-town hospital to help revitalize the surrounding areas.
- There are 7 Evidence-Based Design features that should be incorporated into the in-town rural facilities to increase the quality of care that they are able to provide to their community.

CHAPTER 11

REFLECTIONS

Rural hospitals in America hold a critical position within their communities because they possess the duty and responsibility of not only providing adequate healthcare services for the population, but also bearing the heavy burden of functioning as one of the main socio-economic engines within the area. These factors, along with drastically inadequate operating budgets, often create programmatic and operational challenges for these entities to confront as they fight to provide the technologically current facilities and services needed to adequately care for their community.

The In-Town Rural Hospital

Due to these broad ranging factors many rural hospitals are built on sites that are outside of town for financial reasons as well as the availability of land. Constructing the facility on an in-town site could provide an important economic and community boost to the existing downtown area. This statement is still the contention of this particular body of research. Throughout this period of research there has been no specific evidence found that denies that this is a viable proposal for these types of facilities.

The largest issue that has come to the surface continually during this process is related to **cost.** To say that cost prohibits these types of ideas to become a reality is naive. Every day in our society construction projects encounter cost related issues. This particular problem is not isolated only to these small healthcare facilities. The only way to overcome cost related issues is through careful planning and smart design. There are ways to work around finances which can provide a similar and sometimes better solution in the end for many clients. It is within these alternative methods that these truly communal entities that are being proposed can someday become a reality.

Urban Design

By moving the hospital onto an in-town versus out-of-town site, the goal is to integrate the hospital into the existing structure of the town and try to appropriately address the local context. The overall premise is to create a facility, and eventually another area of town, that is pedestrian based and dedicated to promoting the physical and financial health of its residents by helping to revitalize the area. Blighted areas can be resurrected. Empty lease spaces surrounding the property will have an immediate field of renters looking to relocate next to the new facility. Physicians will need adjacent office space for their practices.

An urban response needs to be taken towards the existing block structure, pushing the building to the edges of the site which will create a street-front similar to other existing buildings in town. At this street level, along all of the facades of this building, is the perfect location to introduce more public spaces as well as lease spaces for retail, food service, or other types of businesses into the area. This will make the hospital perform more like a true mixed-use development.

Parking

The main question that was brought up about parking in the research was whether or not you could achieve sufficient parking on-site in an in-town setting. It can be done and it will typically require some sort of parking deck which may include some sub-surface areas. This is the proper response for parking in an urban setting, even if it is on a smaller scale. Some trade-offs have to be made within construction and this is one of those particular times. Parking has to be sacrificed for the benefit of the urban fabric and the pedestrian zones of the city.

This approach is recommended by this thesis over surface parking because it maximizes the use of an already constrained site. In a downtown setting, many people in these rural areas still want to institute a suburban response to the issue of parking by

making the building an island on the site surrounded by a sea of parking spaces. By concealing the parking and pushing the building to the edges of the site this wasteland of space will be removed and the pedestrian zone of the city will be enhanced with walkable, shop riddled areas.

The question of cost was brought up in this discussion and can be justified if the parking structure is related to and is part of the overall structure of building versus a being just a parking deck on an adjacent property. The parking could also be dedicated for employees only which would relieve some of the concern about whether or not the deck would be used on a daily basis and the money wasted on underutilized parking.

Peripheral Development

Within these areas it is important that the hospital gain control over the development of the properties peripheral to its new site with an overlay district or some other types of covenants. Many hospital related business eventually tend to accumulate in the properties directly around the hospital which may impede other types of businesses from locating in this area. This trend could eventually close off the hospital from the pedestrian friendly, mixed-use area that it began when it was first constructed.

The hospital also has the possibility of using development of the properties around it to expand its own facilities. The hospital could still expand horizontally throughout the landscape, but it could do so by occupying multiple blocks within the downtown area versus residing on a single property. This method could help to keep the scale of the building down and could lend itself to the distribution of occupancy types to certain buildings instead of others to help decrease construction costs of some parts of the facility that do not necessarily be built up to hospital standards.

Building Design

Vision

This thesis recommends that when the hospital facility is placed in town, that it works to blend itself with the context over the majority of the facades expressing only the entrances to the facility in a unique and profound way. There were varying opinions within the interview surveys about the expression of the facility as a completely different building type than the surrounding context versus completely immersing it in its surroundings.

Within these small towns scale is a significant issue because it is typically consistent throughout the area. With the addition of such a large building, the task for the designer is to figure out how to reduce its feeling of scale so that it relates to the town and surrounding buildings and does not make people feel cramped. The building has to remain respectful to its surroundings as well as match the overall scale of the area that it is being placed in.

This can be achieved by breaking up the façades into smaller and more manageable pieces that appear as smaller separate buildings, each with their own character and expression, even though they are not. The facility should also remain as a low-rise structure, stepping back from the street with each level change to also help decrease the overall feeling of the size of the facility.

Access

According to multiple interview survey responses the building should have a main and accessible entrance from at least two main sides of the building. This second entrance would be in addition to any entrance directly from an attached parking structure. Minimizing the number of main entrances to the building will help the facility with security issues and also will reduce staff hired to monitor these areas.

On the main level there should be two main entrances, one for community features and one for hospital features. These should both be pronounced on the street front and easily accessible. The community features entrance to the building needs to be able to be closed off and secured during off hours at the facility.

The goal for the design of the facility is that all of the community and healthcare features should be located on one main, pedestrian level, accessed by these two entrances. All of the more private areas and patient rooms could then be located on the upper floor or floors. This will help with the public/private separation issues within the facility since the overall goal is to increase the usage of the building by the general public.

Structure

These buildings should be pre-designed for future expansion. By creating a sustainable structure that can be added onto easily in the future, the facility will create less wasted materials and create less of an environmental impact on the area. Planning for these additional areas at this stage also will help with initial and future construction costs by helping to locate different occupancy types within the facility with related areas. The healthcare component of the facility has much higher standards of construction than some of the other community features within the building and this should be taken advantage of to help reduce the overall costs of the project.

The main structure of the healthcare portion of the hospital should be designed as a poured in place concrete foundation structure with an integral parking deck. This portion could then be steel construction above to save money or it could remain poured in place concrete. The community portion of the facility could be constructed out of steel which will allow for reduced initial construction costs for these areas of the building. The two portion of the facility would have to be structurally separated for fire code reasons which will add some cost to the structure but it should not be near the cost of the entire building being constructed to hospital standards.

Expansion

Planning for the future is imperative in these small facilities. Short term responses cannot overshadow long term goals. These buildings need to be able to grow and shrink based on market demand and technology. Planning and building for the future now, at least the initial structure, will decrease time and costs for future projects. This approach will also help facilities pre-plan for the expansion of departments so they will already have some sense of how much room they have to grow into.

The addition of outdoor spaces and gardens incorporated into these facilities allows the building to contain areas that are immediately ready for expansion. Since these open areas are already built on top of a man-made support structure, they just have to be closed in. These spaces have to be evenly distributed throughout the facility to allow for expansion of multiple departments. This method would allow for incremental expansion of the facility that would involve filling in gaps that were purposely left in the structure rather than having to wait for a full addition to be built onto the facility before departments could be expanded.

Community Features

The ultimate goal in introducing community features into a facility like this is to help change the current level of interaction between society and healthcare while also providing much needed services and spaces to entities that could not typically afford them on their own. The addition of these features to the hospital could help the hospital decrease their construction costs and improve their revenue stream at the same time by sharing the costs of the facility and the use of the facility with the community. These features need to be placed on or near the street in a more public area of the building so that they are more readily accessible to pedestrian traffic. This should help to increase their use by the residents of the town.

It is recommended by this thesis that the following community features be included into the planning of one of these rural hospital facilities.

- **Fitness Center**
- **Chapel**
- **Conference & Educational Center**
- **Lease Space**
- **Food Court**

There are some specific stipulations attached to each of these features that should be addressed during the planning stages of the project.

Fitness Center

The Fitness Center is a highly recommended choice for a feature to include into a rural in-town hospital for multiple reasons. Many of these small towns do not have a large fitness center in the area to join so the hospital typically would have little if no competition within this business arena. Within the hospital building itself, the Fitness Center can be easily combined with the Physical Therapy department which will decrease both space requirements and money spent on additional construction since both departments require similar facilities such as locker rooms, showers, and open areas for training and equipment. Through the act of sharing space with the public, the physical therapy patients may feel more normal and less ostracized by society. In the community's eyes, the inclusion of this feature will also help the hospitals efforts to promote physical health and the benefits of physical activity for its residents. Finally, for the employees, it would be a nice feature to offer them for their use to help reduce their stress levels and increase their physical health as well.

Chapel

The need for spiritual guidance in times of need and hardship is not necessarily practiced by all but the need is understood by many. Religion plays a large part in many small rural towns so to allow people a place of solace in a sometimes chaotic environment is money well spent. The environment should be fitting to a facility as small as the proposed hospitals confined to a minimal space and modest finishes.

Conference & Educational Center

The Conference Center portion of this particular feature was requested to be included in the facility by a large majority of the internet survey participants (73.7%). The exact makeup of the included spaces and their sizes associated with this type of occupancy is not know at this time and would need to be researched and then created. Most of the spaces could remain generic in nature so that they could operate in more multi-purpose ways that would let them also be used by the Educational Center.

The Educational Center is a definite requirement that needs to be included into one of these rural facilities. As mentioned earlier in this thesis, many of the health related issues in these rural areas are also related to societal issues and can be affected or altered through proper education. Many of these issues such as daily nutrition, substance abuse, teen pregnancy, and sexually transmitted diseases are major topics in these small communities that need to be addressed by the proper institutions to ensure that these situations are properly being tended to and improved upon.

Lease Space

There are two major ways in which lease space could benefit the hospital. In terms of the overall community interaction with the facility along with its effort to blend into the local context, generic lease spaces available to businesses of any kind would create a more organic feeling of growth and occupancy within the neighborhood. This

would help blend the hospital façade into the fabric of its surroundings by keeping in place the traditional town style of street front where there is typically retail on the ground floor with apartments or offices above.

If the space were allocated for specifically hospital related uses then the facility could benefit by creating condo style relationships with physicians for their offices so that they personally have a financial stake in the hospital and how it performs. Parallel businesses would also be beneficial such as DME dealerships, pharmacies, or florists.

Food Court

Many of these small towns do not have a lot of restaurants so with the addition of a food court or specialty restaurants, especially in a downtown area, the hospital could help encourage additional daily traffic for itself as well as for other surrounding businesses. This feature would be less costly to add to the facility because the hospital would already have the kitchen, delivery areas, and food storage areas that would be required. All of these could just be slightly expanded to accommodate the additional need. This feature would be the first item to be removed from the building program as it is considered the least important.

Services

These facilities need to offer to their constituents the main services that would allow for them to live healthier and less stressful lives. The ultimate selection of these services should be tailored directly to the particular community involved. The average number of services provided by one of these facilities to its constituents based on the database survey of small Georgia hospitals (Appendix D) was 10 services. This was also the number of services selected for the design exercise included in Chapter 8. After careful consideration and research feedback in terms of both surveys, the typical range of

services that would be recommend in these rural areas should be shortened to a **main group of 8 as a basis of design** which are listed below:

- **Lab (Clinical)**
- **Pharmacy**
- **Radiology**
- **Emergency Department**
- **Respiratory Care**
- **In/Outpatient Surgical**
- **Dietary**
- **Physical Therapy**

All of these services appeared, were approved, or were recommended in each of the three survey methods applied by this research effort: the hospital database survey, the internet survey, and the interview survey.

There were 4 additional services that made a strong showing in each of the study methods but there were legitimate reasons on more than one occasion why they should not be incorporated as a standard feature for small rural hospitals. **These 4 features are recommended as alternates** or additional services that should be looked at after the initial 8 services are in place or as services that could initially be added for some larger rural communities or areas with a specific need. These 4 features are listed below:

- **Obstetrics**
- **Nuclear Medicine**
- **Pediatrics**
- **ICU**

Obstetrics depends largely on the town demographics. According to some of the interview participants, typically this service would need at least two physicians if it is to

be offered at all by the facility, so they could cover each others patients when one or the other is out of town. The large teen pregnancy rates in these rural areas would be one major reason to try to offer this service but it might not be enough to convince two adequate physicians to come practice at the facility full time. Hopefully a better educational effort made by the community would also help to lower this pregnancy rate in the first place decreasing the need altogether.

Nuclear Medicine is not a daily service that is called for in these areas and it requires specialized equipment. It is not included in the standard services because it might not adequately cover the additional costs for its inclusion in the facility. If this service were implemented, however, it could share spaces and features with the Radiology department which would already be an active part of the facility.

Pediatrics does not really need a dedicated space since they would be able to work out of the clinic that will be present in these facilities. The question regarding this service is whether or not it would be worth it to the facility to hire a full time physician for this service and supply them with the additional office space they would need to adequately perform their tasks.

The ICU could be included in the current facility as acuity adaptable rooms versus a dedicated ICU. This would allow for a swing usage of the beds from regular Med/Surge usage to ICU and vice versa. This strategic planning move could optimize staff and facility usage on the patient floor.

Evidence-Based Design

Evidence-Based Design features should be added to the in-town rural hospital. Through the addition of these features, these hospitals can achieve a higher quality of care for their patients which is not typically found in rural settings. Although the goal is to add as many of these features as possible to the facility without drastically expanding

the building footprint or the existing budget, the harder task is evaluating which features are worth the additional costs in terms of the scale facility.

In the applied use of Evidence-Based Design research, the following is the list of features that is recommended by this thesis which should be included if possible into one of these rural facilities:

- single patient rooms – these reduce hospital acquired infections and the need for patient transfers

- At least 4 acuity adaptable rooms that can be used for typical patients or that can be converted for ICU use – expands the services offered by the facility to include ICU without the addition of a traditional and dedicated ICU unit

- Larger patient bathrooms - help reduce patient falls

- The incorporation of positive distractions such as healing gardens which decrease stress and increase patient satisfaction – these outdoor areas also allow places for future expansion since they are already built on a man-made support structure and can be easily enclosed

- Decentralized nursing stations – allows for the nurses to be closer to their patients and also allows for greater repetition on the patient floor which should decrease construction costs

- Additional HEPA filters - help reduce hospital acquired infections

- A staff gym – this feature should only be included if a Fitness Center is included on site

Survey responses within this thesis suggest that the perceived benefits that these particular features add to a facility of this size far outweigh their associated costs.

Questions & Research Areas

There are some additional questions and research areas could be studied as part of a continuation of this overall proposal.

- What are all of the possible benefits and problems involved with spreading a hospital across multiple sites within a downtown area?
- A research study involving an in depth review from the perspective of why these facilities should be located outside of town
- How important is increasing the overall health of a community to its residents?
- Would the proposed educational spaces and healthcare education programs actually decrease socially related healthcare problems in these small communities?

APPENDIX A

NATIONAL DATABASE OF RECENTLY COMPLETED HEALTHCARE CONSTRUCTION PROJECTS

A database of Community Hospital projects was created that contains information on construction costs, size, and geographical locations. This information was gathered from Healthcare Design Magazine issues within the last three years. This database was an effort to document current Community Hospital facility design information in terms of number of beds, costs per bed, square footage, cost per square foot, etc. This information was national in nature covering 23 states including Georgia.

Table A.1 – Recent National Hospital Construction Projects Database

Community Hospital Construction

National Inventory Analysis

		FACILITY LOCATION			FACILITY SIZE			COST INFORMATION		
Facility Name	Year	City	State	Population	Acres	Sq. Footage	# of beds	Cost	Per Sq. Ft.	Per Bed
Bronson Methondist Hospital	2001	Kalamazoo	Michigan	77,145	14	750,000	286	$ 34,000,000	$ 45	$ 118,881
Anne Arundel Medical Center	2001	Annapolis	Maryland	35,838	26.28	346,900	182	$ 71,000,000	$ 205	$ 390,110
Little Company of Mary Hospital	2002	Torrance	California	137,946	11.6	123,500	122	$ 37,500,000	$ 304	$ 307,377
Mercy Medical Center	2000	Oshkosh	Wisconsin	62,916	45	350,000	192	$ 60,000,000	$ 171	$ 312,500
Penrose Main Hospital	2001	Colorado Springs	Colorado	4,417,714		13,912	24	$ 1,400,000	$ 101	$ 58,333
Three Rivers Comm. Hospital	2001	Grants Pass	Oregon	26,087	19.8	196,000	98	$ 54,000,000	$ 276	$ 551,020
Anschutz Inpatient Pavilion	2003	Aurora	Colorado	4,301,261	270	478,500	101	$ 98,000,000	$ 205	$ 970,297
Upper Chesapeake Medical Center	2000	Fallston	Maryland	8,427	25	225,000	136	$ 90,000,000	$ 400	$ 661,765
Adirondack Medical Center	2002	Saranac Lake	New York	4,923	6 mil.	107,700	97	$ 15,000,000	$ 139	$ 154,639
Alegent Health-Mercy Hospital	2003	Council Bluffs	Iowa	58,249		124,334	284	$ 18,520,000	$ 149	$ 65,211
Boone County Hospital	2000	Boone	Iowa	12,852		67,116	128	$ 8,150,787	$ 121	$ 63,678
Com. Hosp.of the Monterrey Peninsula	2008	Monterey	California	29,674		533,949	140	$150,000,000	$ 281	$ 1,071,429
Florida Hospital Flagler	2002	Palm Coast	Florida	32,732	100	294,958	81	$ 46,302,684	$ 157	$ 571,638
Health Central Expansion	2003	Ocoee	Florida	29,849		150,000	171	$ 28,000,000	$ 187	$ 163,743
Mercy Medical Center - Lundy Pavilion	2002	Cedar Rapids	Iowa	237,230		145,000	0	$ 32,000,000	$ 221	
Jersey Medical Center	2003	Jersey City	New Jersey	240,055	13.4	400,000	361	$125,000,000	$ 313	$ 346,260
Little Co. of Mary HospitalHannon Tower	2002	Torrance	California	137,946		123,600	0	$ 43,000,000	$ 348	
Louise Obici Memorial Hospital	2002	Suffolk	Virginia	63,667		365,000	150	$ 84,000,000	$ 230	$ 560,000
McKay-Dee Hospital Center	2002	Ogden	Utah	196,533		700,000	317	$125,000,000	$ 179	$ 394,322
Northwest Community Hospital	2006	Arlington Heights	Illinois	76,031	35	201,000	160	$ 93,000,000	$ 463	$ 581,250
St. Rose Dominican Hos.-Siena Campus	2002	Henderson	Nevada	207,640		350,000	140	$ 62,000,000	$ 177	$ 442,857
St. Vincent Jennings Hospital	2002	North Vernon	Indiana	6,515		62,900	0	$ 7,650,000	$ 122	
St. Vincent Randolph Hospital	2001	Winchester	Indiana	5,037	21	62,000	25	$ 11,148,000	$ 180	$ 445,920
Sentara CarePlex Hospital	2002	Hampton	Virginia	146,437		385,674	232	$ 75,000,000	$ 194	$ 323,276
The Villages Regional Hospital	2002	The Villages	Florida	11,828		106,000	60	$ 18,700,000	$ 176	$ 311,667
Waccamaw Community Hospital	2002	Murrells Inlet	South Carolina	5,519		190,000	69	$ 33,800,000	$ 178	$ 489,855
Wuesthoff Medical Center	2002	Melbourne	Florida	71,382		125,000	114	$ 23,000,000	$ 184	$ 201,754
Kaiser Found.Hosp.-Downey Med. Cntr	2005	Downey	California	107,323		960,000	352	$240,000,000	$ 250	$ 681,818
Parker Adventist Hospital	2004	Parker	Colorado	38,428		218,507		$ 57,968,513	$ 265	
Santa Barbara College Hospital	2012	Santa Barbara	California	85,899		472,000		$248,000,000	$ 525	
Capital Regional Medical Center	2003	Tallahassee	Florida	150,624		325,000	156	$ 60,000,000	$ 185	$ 384,615
Condell Medical Center	2003	Libertyville	Illinois	20,742		250,000	16	$ 63,000,000	$ 252	$ 3,937,500
Florida Hospital Waterman	2003	Tavares	Florida	11,621		420,000	182	$ 77,000,000	$ 183	$ 423,077
Mary Washington Hospital	2003	Fredericksburg	Virginia	19,279		113,000	100	$ 43,300,000	$ 383	$ 433,000
The Medical Center	2004	Bowling Green	Kentucky	49,296		83,725	0	$ 16,783,850	$ 200	
Munroe Regional Medical Center	2004	Ocala	Florida	49,745		358,406	421	$ 55,683,110	$ 155	$ 132,264
Parrish Medical Center	2002	Titusville	Florida	42,614		370,451	210	$ 54,865,000	$ 148	$ 261,262
Potomac Hospital Prototype Unit	2002	Woodbridge	Virginia	31,941		16,369	12	$ 3,900,000	$ 238	$ 325,000
Regina Medical Center	2004	Hastings	Minnesota	18,204		60,505	61	$ 13,679,681	$ 226	$ 224,257
Riverside Medical Center	2003	Kankakee	Illinois	27,491		105,000	0	$ 22,000,000	$ 210	
Sacred Heart Hospital on Emerald Coast	2003	Destin	Florida	11,119		105,000	50	$ 19,800,000	$ 189	$ 396,000
St. Francis Hospital & Health Center	2003	Blue Island	Illinois	23,463		101,000	0	$ -	$ -	
St. Joseph's Community Hospital	2005	West Bend	Wisconsin	28,152		185,790	82	$ 64,000,000	$ 344	$ 780,488
St. Vincent Carmel Hospital	2003	Carmel	Indiana	37,733		105,000	12	$ 21,500,000	$ 205	$ 1,791,667
Stonewall Jackson Hospital	2002	Lexington	Virginia	6,867		116,000	38	$ 19,338,000	$ 167	$ 508,895
Tanner Medical Center	2003	Villa Rica	Georgia	8,087		84,000	40	$ 13,450,000	$ 160	$ 336,250
Trophy Club Medical Center	2004	Trophy Club	Texas	6,492		57,584	20	$ 11,100,000	$ 193	$ 555,000
Valley Presbyterian Hospital	2004	Van Nuys	California	165,188		127,000	180	$ 37,500,000	$ 295	$ 208,333
Washoe Med. Center at South Meadows	2004	Reno	Nevada	180,480	29	91,000		$ 26,000,000	$ 286	

APPENDIX B

STATE OF GEORGIA:

DATABASE OF HOSPITALS SORTED BY BED COUNT

A simply facility database was compiled with the help of the American Hospital Directory website (www.ahd.com) that containing the name, location, and bed count of all hospitals within the state of Georgia. This was an effort to determine what percentage of the hospitals within the state that fell into our demographic.

Table B.1 – Alphabetical Georgia Hospital Database w/ Bed Count

Hospital Name	Beds	City
Anchor Hospital	84	Atlanta
Appling Hospital	33	Baxley
Athens Regional Medical Center	321	Athens
Atlanta Medical Center	331	Atlanta
Atlanta VA Medical Center	0	Decatur
Augusta VA Medical Center	0	Augusta
Bacon County Hospital	25	Alma
Barrow Regional Medical Center	56	Winder
Berrien County Hospital	47	Nashville
BJC Medical Center	72	Commerce
Bleckley Memorial Hospital	15	Cochran
Brooks County Hospital	25	Quitman
Burke Medical Center	40	Waynesboro
Calhoun Memorial Hospital	25	Arlington
Candler County Hospital	25	Metter
Candler Hospital	219	Savannah
Carl Vinson VA Medical Center	0	Dublin
Cartersville Medical Center	112	Cartersville
Central State Hospital	126	Milledgeville
Charlton Memorial Hospital	15	Folkston
Chatuge Regional Hospital	25	Hiawassee
Chestatee Regional Hospital	49	Dahlonega
Children's Healthcare of Atlanta at Egleston	212	Atlanta
Children's Healthcare of Atlanta at Hughes Spalding	0	Atlanta
Children's Healthcare of Atlanta at Scottish Rite	196	Atlanta
Clinch Memorial Hospital	15	Homerville
Coastal Harbor Treatment Center	17	Savannah
Cobb Memorial Hospital	71	Royston
Coffee Regional Medical Center	88	Douglas
Coliseum Medical Centers	185	Macon
Coliseum Northside Hospital	103	Macon
Coliseum Psychiatric Center	32	Macon
Colquitt Regional Medical Center	76	Moultrie

Table B.1 – Alphabetical Georgia Hospital Database w/ Bed Count – Cont.

Hospital Name	Beds	City
Columbus Specialty Hospital	30	Columbus
Crisp Regional Hospital	65	Cordele
DeKalb Medical Center	398	Decatur
DeKalb Medical Center - Decatur Campus	45	Decatur
DeKalb Medical Center - Hillandale Campus	0	Lithonia
Doctors Hospital of Augusta	216	Augusta
Doctors Hospital of Columbus	171	Columbus
Dodge County Hospital	71	Eastman
Donalsonville Hospital, Inc.	65	Donalsonville
Dorminy Medical Center	75	Fitzgerald
Early Memorial Hospital	25	Blakely
East Central Regional Hospital - Augusta Campus	110	Augusta
East Central Regional Hospital - Gracewood Campus	0	Gracewood
East Georgia Regional Medical Center	150	Statesboro
Effingham Hospital	25	Springfield
Eisenhower Army Medical Center	0	Fort Gordon
Elbert Memorial Hospital	52	Elberton
Emanuel Medical Center	42	Swainsboro
Emory Crawford Long Hospital	430	Atlanta
Emory Dunwoody Medical Center	134	Atlanta
Emory Eastside Medical Center	139	Snellville
Emory University Hospital	419	Atlanta
Emory-Adventist Hospital	73	Smyrna
Evans Memorial Hospital	49	Claxton
Fairview Park Hospital	173	Dublin
Fannin Regional Hospital	34	Blue Ridge
Flint River Community Hospital	49	Montezuma
Floyd Medical Center	213	Rome
Focus By The Sea	101	Saint Simons Island
Georgia Regional Hospital - Atlanta	124	Decatur
Georgia Regional Hospital at Savannah	112	Savannah
Gordon Hospital	65	Calhoun
Grady General Hospital	46	Cairo
Grady Memorial Hospital	716	Atlanta
Gwinnett Medical Center	284	Lawrenceville
Habersham County Medical Center	53	Demorest
Hamilton Medical Center	255	Dalton
Hart County Hospital	82	Hartwell
HEALTHSOUTH Central Georgia Rehabilitation Hospital	58	Macon
Henry Medical Center	124	Stockbridge
Higgins General Hospital	15	Bremen
Hillside	0	Atlanta

Table B.1 – Alphabetical Georgia Hospital Database w/ Bed Count – Cont.

Hospital Name	Beds	City
Houston Medical Center	155	Warner Robins
Hughston Orthopedic Hospital	71	Columbus
Hutcheson Medical Center	156	Fort Oglethorpe
Inner Harbour Hospital	0	Douglasville
Irwin County Hospital	34	Ocilla
Jasper Memorial Hospital	12	Monticello
Jeff Davis Hospital	25	Hazlehurst
Jefferson Hospital	37	Louisville
Jenkins County Hospital	15	Millen
Joan Glancy Memorial Hospital	0	Duluth
John D. Archbold Memorial Hospital	204	Thomasville
Kindred Hospital - Atlanta	72	Atlanta
Laurel Heights Hospital	0	Atlanta
Liberty Regional Medical Center	23	Hinesville
Louis Smith Memorial Hospital	25	Lakeland
Martin Army Community Hospital	0	Fort Benning
McDuffie Regional Medical Center	35	Thomson
MCG Medical Center	466	Augusta
Meadows Regional Medical Center	87	Vidalia
Medical Center of Central Georgia	534	Macon
Memorial Health University Medical Center	370	Savannah
Memorial Hospital and Manor	80	Bainbridge
Memorial Hospital of Adel	60	Adel
Miller County Hospital	25	Colquitt
Minnie G. Boswell Memorial Hospital	25	Greensboro
Mitchell County Hospital	25	Camilla
Monroe County Hospital	25	Forsyth
Morgan Memorial Hospital	41	Madison
Murray Medical Center	37	Chatsworth
Newnan Hospital	155	Newnan
Newnan Hospital East	100	Newnan
Newton Medical Center	90	Covington
North Fulton Regional Hospital	128	Roswell
North Georgia Medical Center	40	Ellijay
Northeast Georgia Medical Center	424	Gainesville
Northeast Georgia Medical Center - Lanier Park Campus	0	Gainesville
Northlake Medical Center	95	Tucker
Northside Hospital	444	Atlanta
Northside Hospital - Cherokee	84	Canton
Northside Hospital - Forsyth	78	Cumming
Northwest Georgia Regional Hospital	130	Rome
Oconee Regional Medical Center	102	Milledgeville

Table B.1 – Alphabetical Georgia Hospital Database w/ Bed Count – Cont.

Hospital Name	Beds	City
Palmyra Medical Centers	167	Albany
Peach Regional Medical Center	25	Fort Valley
Peachford Behavioral Health System	184	Atlanta
Perry Hospital	39	Perry
Phoebe Putney Memorial Hospital	380	Albany
Phoebe Worth Medical Center	15	Sylvester
Piedmont Fayette Hospital	100	Fayetteville
Piedmont Hospital	447	Atlanta
Piedmont Mountainside Hospital	35	Jasper
Polk Medical Center	22	Cedartown
Putnam General Hospital	25	Eatonton
Rabun County Hospital	25	Clayton
Redmond Regional Medical Center	164	Rome
Regency Hospital of Central Georgia	34	Macon
Regency Hospital of South Atlanta	40	East Point
Ridgeview Institute	80	Smyrna
Rockdale Medical Center	107	Conyers
Roosevelt Warm Springs Institute for Rehabilitation	121	Warm Springs
Saint Francis Hospital	239	Columbus
Saint Joseph Hospital	146	Augusta
Saint Joseph's Hospital	186	Savannah
Saint Joseph's Hospital of Atlanta	346	Atlanta
Saint Mary's Hospital	150	Athens
Satilla Regional Medical Center	157	Waycross
Screven County Hospital	25	Sylvania
Select Specialty Hospital	40	Savannah
Select Specialty Hospital - Atlanta	30	Atlanta
Select Specialty Hospital - Augusta	30	Augusta
Shepherd Center	100	Atlanta
Smith Northview Hospital	29	Valdosta
South Fulton Medical Center	281	East Point
South Georgia Medical Center	263	Valdosta
Southeast Georgia Health System - Brunswick Campus	284	Brunswick
Southeast Georgia Health System - Camden Campus	40	Saint Marys
Southern Crescent Hospital for Specialty Care	30	Riverdale
Southern Regional Medical Center	267	Riverdale
Southwest Georgia Regional Medical Center	25	Cuthbert
Southwestern State Hospital	65	Thomasville
Spalding Regional Medical Center	160	Griffin
Stephens County Hospital	92	Toccoa
Stewart-Webster Hospital	31	Richland
Sumter Regional Hospital	116	Americus

Table B.1 – Alphabetical Georgia Hospital Database w/ Bed Count – Cont.

Hospital Name	Beds	City
Sylvan Grove Hospital	25	Jackson
Tanner Medical Center / Carrollton	165	Carrollton
Tanner Medical Center / Villa Rica	40	Villa Rica
Tattnall Community Hospital	25	Reidsville
Taylor Regional Hospital	55	Hawkinsville
Taylor-Telfair Regional Hospital	15	McRae
The Bradley Center of Saint Francis	64	Columbus
The Medical Center	397	Columbus
The Specialty Hospital	20	Rome
Tift Regional Medical Center	161	Tifton
Turning Point Hospital	62	Moultrie
Union General Hospital	45	Blairsville
University Hospital	493	Augusta
Upson Regional Medical Center	115	Thomaston
Walton Regional Medical Center	77	Monroe
Walton Rehabilitation Hospital	58	Augusta
Warm Springs Medical Center	25	Warm Springs
Washington County Regional Medical Center	56	Sandersville
Wayne Memorial Hospital	115	Jesup
WellStar Cobb Hospital	319	Austell
WellStar Douglas Hospital	84	Douglasville
WellStar Kennestone Hospital	463	Marietta
WellStar Paulding Hospital	38	Dallas
WellStar Windy Hill Hospital	35	Marietta
Wesley Woods Hospital	16	Atlanta
Wesley Woods Hospital - Long Term Care	18	Atlanta
West Central Georgia Regional Hospital	190	Columbus
West Georgia Health System West Georgia Medical Center	276	LaGrange
Wheeler County Hospital	40	Glenwood
Wills Memorial Hospital	25	Washington
Winn Army Community Hospital	0	Fort Stewart

APPENDIX C

STATE OF GEORGIA:

DATABASE OF HOSPITALS UNDER 60 BEDS W/ TOWN POPULATIONS UNDER 10,000 PEOPLE

The Georgia Hospital database created in Appendix B was then originally slimmed down to contain only hospitals with under 50 beds. Hospitals with no licensed beds or hospitals in metropolitan areas were then removed from the list to make it fit more with the rural demographic that this thesis is focusing on. This list was then re-expanded to contain similar hospitals that were under 60 beds within Georgia.

More information was then added about each facility to this database giving it a broad range from simple employee information listed in Table C.1, to a much wider view of the healthcare facility and its relationship to its respective town as shown in Table C.2. The summary information from this database was listed previously in Table 2.2 within Chapter 2 of this thesis.

Table C.1 – Georgia Rural Hospital Employee Summary

Georgia Rural Hospital Employee Summary	
Position	**# per facility**
Anesthetists	0.29
Physicians	1.25
Dieticians	0.60
Inhalation Therapists	2.31
Practice & Vocational Nurses	13.20
Occupational Therapists	0.15
Other	80.45
Physical Therapists	0.76
Physician Assistants	0.91
Radiologist	0.18
Registered Nurses	18.35
Registered Pharmacists	1.16
Speech Pathologists	0.13
Medical Social Workers	0.42
Total	**120.16**

Table C.2 – Database of Georgia Hospitals w/ less than 60 licensed beds

Hospital Name	Beds	City	Population	Total Employees	% of Population
Jasper Memorial Hospital	12	Monticello	2428	41	1.69%
Bleckley Memorial Hospital	15	Cochran	4544	71	1.56%
Charlton Memorial Hospital	15	Folkston	3255	68	2.09%
Clinch Memorial Hospital	15	Homerville	2803	80	2.85%
Higgins General Hospital	15	Bremen	4579	110	2.40%
Jenkins County Hospital	15	Millen	3492	73	2.09%
Phoebe Worth Medical Center	15	Sylvester	5990	148	2.47%
Taylor-Telfair Regional Hospital	15	McRae	2682	89	3.32%
Polk Medical Center	22	Cedartown	9470	100	1.06%
Bacon County Hospital	25	Alma	3236	153	4.73%
Calhoun Memorial Hospital	25	Arlington	1602	78	4.87%
Chatuge Regional Hospital	25	Hiawassee	808	96	11.88%
Early Memorial Hospital	25	Blakely	5696	144	2.53%
Effingham Hospital	25	Springfield	1821	127	6.97%
Louis Smith Memorial Hospital	25	Lakeland	7241	66	0.91%
Miller County Hospital	25	Colquitt	1939	85	4.38%
Monroe County Hospital	25	Forsyth	3776	93	2.46%
Putnam General Hospital	25	Eatonton	6764	134	1.98%
Screven County Hospital	25	Sylvania	2675	77	2.88%
Southwest Georgia Regional Medical Center	25	Cuthbert	3731	99	2.65%
Sylvan Grove Hospital	25	Jackson	3934	48	1.22%
Tattnall Community Hospital	25	Reidsville	2235	30	1.34%
Warm Springs Medical Center	25	Warm Springs	485	117	24.12%
Wills Memorial Hospital	25	Washington	4295	134	3.12%
Stewart-Webster Hospital	31	Richland	1772	43	2.43%
Mitchell County Hospital	33	Camilla	5669	95	1.68%
Irwin County Hospital	34	Ocilla	3270	76	2.32%
Brooks County Hospital	35	Quitman	4638	82	1.77%
Piedmont Mountainside Hospital	35	Jasper	2167	0	0.00%
Peach Regional Medical Center	36	Fort Valley	8005	91	1.14%
Jefferson Hospital	37	Louisville	2712	91	4.76%
Murray Medical Center	37	Chatsworth	3531	154	4.36%
WellStar Paulding Hospital	38	Dallas	4972	199	4.00%
Appling Hospital	39	Baxley	4150	198	4.77%
Burke Medical Center	40	Waynesboro	5813	129	2.22%
Wheeler County Hospital	40	Glenwood	884	105	11.88%

Table C.2 – Database of Georgia Hospitals w/ less than 60 licensed beds – Cont.

Hospital Name	Beds	City	Population	Total Employees	% of Population
Morgan Memorial Hospital	41	Madison	3636	37	1.02%
Emanuel Medical Center	42	Swainsboro	6943	105	3.80%
Minnie G. Boswell Memorial Hospital	44	Greensboro	3238	125	3.86%
Union General Hospital	45	Blairsville	659	162	24.58%
Perry General Hospital	45	Perry	9600	198	2.06%
Berrien County Hospital	47	Nashville	4697	198	1.77%
McDuffie Regional Medical Center	47	Thomson	6828	178	2.61%
Chestatee Regional Hospital	49	Dahlonega	3638	0	0.00%
Evans Memorial Hospital	49	Claxton	2276	129	5.67%
Flint River Community Hospital	49	Montezuma	3999	169	4.23%
Grady General Hospital	49	Cairo	9239	110	1.19%
North Georgia Medical Center	49	Ellijay	1584	171	10.80%
Rabun County Hospital	49	Clayton	2019	115	5.70%
Jeff Davis Hospital	50	Hazlehurst	3787	123	3.25%
Elbert Memorial Hospital	52	Elberton	4743	202	4.26%
Tanner Medical Center / Villa Rica	52	Villa Rica	4134	118	2.85%
Habersham County Medical Center	53	Demorest	1465	279	19.04%
Taylor Regional Hospital	55	Hawkinsville	3280	149	4.54%
Washington County Regional Medical Center	56	Sandersville	6144	54	0.88%
Candler County Hospital	60	Metter	3879	155	4.00%
Memorial Hospital of Adel	60	Adel	5307	226	4.26%

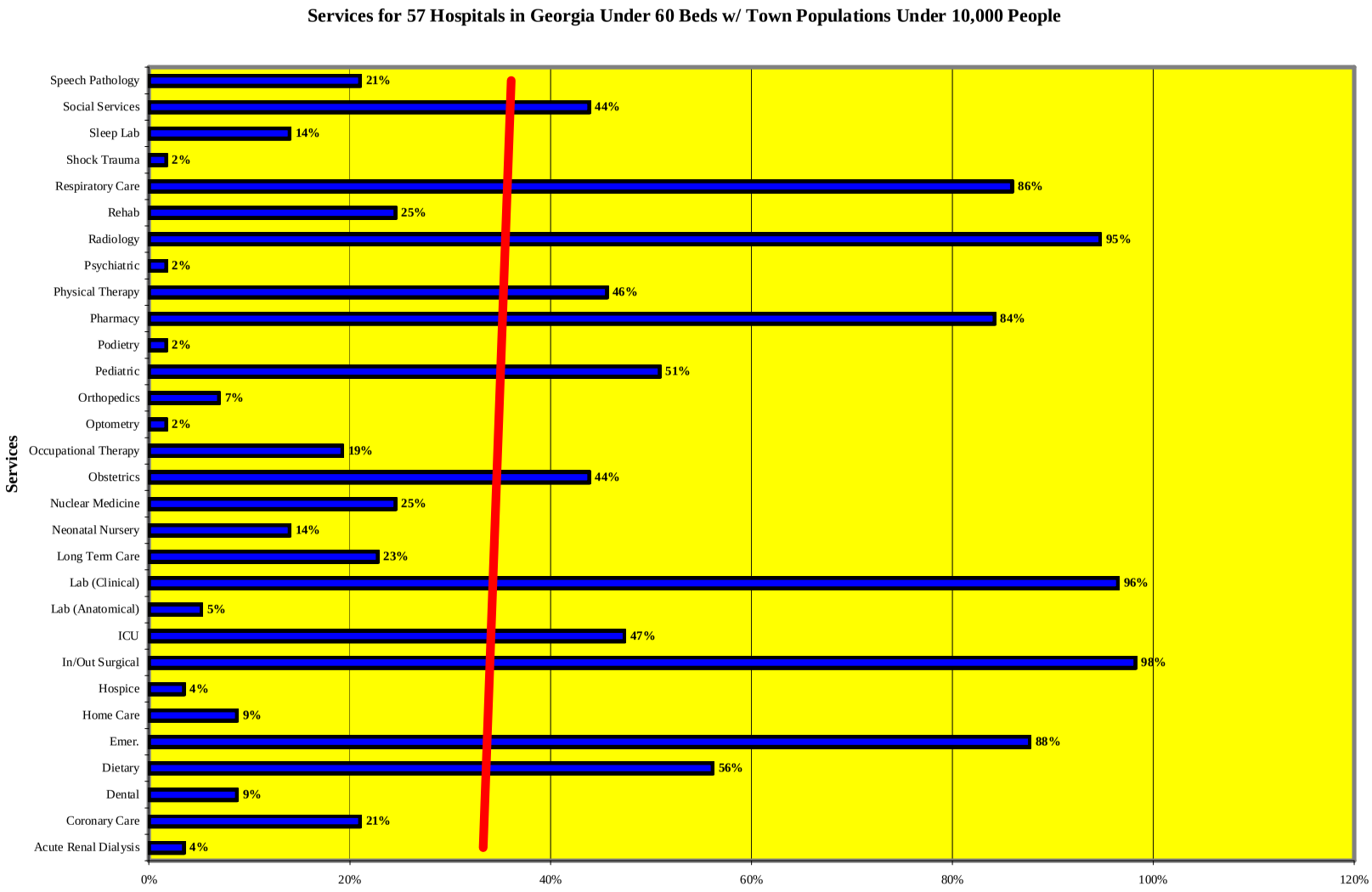


Figure C.1 – Chart of Services Offered by Georgia Rural Hospitals

APPENDIX D

STATE OF GEORGIA:

SERVICES ANALYSIS OF HOSPITALS UNDER 60 BEDS W/ TOWN POPULATIONS UNDER 10,000 PEOPLE

Services Based on Population Size

To access the accuracy of the decision of services offered from the previous section based on study averages, this thesis has also broken the database information into segments directly related to population sizes. The goal here is to see if there is any correlation between the averages of the entire study and specific market segments. The database has been broken into segments that contain similar numbers of facilities within each portion to keep the numbers more comparable.

Services for Towns: 0 – 1,000 People

There are **4 towns** within the referenced database that contain 0 – 1,000 people. The average number of services offered for these size towns is **9.5**. All of the available services offered in the towns this size are listed below in Table 6.2.

Table D.1 – Services of Facilities in towns between 0 – 1,000 people

Services	# of Facilities Offered at	% of Facilities
In/Out Surgical	4	100%
Lab (Clinical)	4	100%
Pharmacy	4	100%
Respiratory Care	4	100%
Dietary	3	75%
Emergency Department	3	75%
Radiology	3	75%
ICU	2	50%
Nuclear Medicine	2	50%
Obstetrics	2	50%
Pediatric	2	50%
Social Services	2	50%
Dental	1	25%
Physical Therapy	1	25%
Rehab	1	25%

This segment of facilities contains **80%** of the same services as the overall averages.

Services for Towns: 1,000 – 2,000 People

There are **6 towns** within the referenced database that contain 1,000 – 2,000 people. The average number of services offered for these size towns is **10.8**. All of the available services offered in the towns this size are listed below in Table 6.3.

Table D.2 – Services of Facilities in towns between 1,000 – 2,000 people

Services	# of Facilities Offered at	% of Facilities
Emergency Department	6	100%
In/Out Surgical	6	100%
Lab (Clinical)	6	100%
Pharmacy	6	100%
Radiology	6	100%
Respiratory Care	5	83%
Dietary	3	50%
Long Term Care	3	50%
Physical Therapy	3	50%
Speech Pathology	3	50%
ICU	2	33%
Nuclear Medicine	2	33%
Obstetrics	2	33%
Pediatric	2	33%
Rehab	2	33%
Sleep Lab	2	33%
Social Services	2	33%
Coronary Care	1	17%
Home Care	1	17%
Optometry	1	17%

This segment of facilities contains **80%** of the same services as the overall averages.

Services for Towns: 2,000 – 3,000 People

There are **9 towns** within the referenced database that contain 2,000 – 3,000 people. The average number of services offered for these size towns is **8.88**. All of the available services offered in the towns this size are listed below in Table 6.4.

Table D.3 – Services of Facilities in towns between 2,000 – 3,000 people

Services	**# of Facilities Offered at**	**% of Facilities**
In/Out Surgical	9	100%
Radiology	9	100%
Emergency Department	8	89%
Lab (Clinical)	8	89%
Respiratory Care	7	78%
Pharmacy	6	67%
Physical Therapy	6	67%
Dietary	5	56%
Pediatric	5	56%
Social Services	4	44%
Occupational Therapy	2	22%
Rehab	2	22%
Sleep Lab	2	22%
Speech Pathology	2	22%
Coronary Care	1	11%
Hospice	1	11%
ICU	1	11%
Neonatal Nursery	1	11%
Obstetrics	1	11%

This segment of facilities contains **90%** of the same services as the overall averages.

Services for Towns: 3,000 – 4,000 People

There are **15 towns** within the referenced database that contain 3,000 – 4,000 people. The average number of services offered for these size towns is **9.93**. All of the available services offered in the towns this size are listed below in Table 6.5.

Table D.4 – Services of Facilities in towns between 3,000 – 4,000 people

Services	# of Facilities Offered at	% of Facilities
In/Out Surgical	14	93%
Lab (Clinical)	14	93%
Radiology	14	93%
Emergency Department	13	87%
Respiratory Care	13	87%
Pharmacy	11	73%
Dietary	8	53%
ICU	7	47%
Pediatric	7	47%
Obstetrics	6	40%
Social Services	5	33%
Nuclear Medicine	4	27%
Physical Therapy	4	27%
Coronary Care	3	20%
Occupational Therapy	3	20%
Rehab	3	20%
Speech Pathology	3	20%
Dental	2	13%
Home Care	2	13%
Long Term Care	2	13%
Neonatal Nursery	2	13%
Sleep Lab	2	13%
Acute Renal Dialysis	1	7%
Hospice	1	7%
Lab (Anatomical)	1	7%
Podiatry	1	7%
Shock Trauma	1	7%

This segment of facilities contains **90%** of the same services as the overall averages.

Services for Towns: 4,000 – 5,000 People

There are **9 towns** within the referenced database that contain 4,000 – 5,000 people. The average number of services offered for these size towns is **11**. All of the available services offered in the towns this size are listed below in Table 6.6.

Table D.5 – Services of Facilities in towns between 4,000 – 5,000 people

Services	# of Facilities Offered at	% of Facilities
Emergency Department	9	16%
In/Out Surgical	9	16%
Lab (Clinical)	9	16%
Pharmacy	8	14%
Radiology	8	14%
Respiratory Care	8	14%
Dietary	6	11%
ICU	6	11%
Pediatric	5	9%
Obstetrics	4	7%
Occupational Therapy	4	7%
Physical Therapy	4	7%
Coronary Care	3	5%
Social Services	3	5%
Long Term Care	2	4%
Rehab	2	4%
Acute Renal Dialysis	1	2%
Dental	1	2%
Home Care	1	2%
Neonatal Nursery	1	2%
Nuclear Medicine	1	2%
Psychiatric	1	2%
Sleep Lab	1	2%
Speech Pathology	1	2%

This segment of facilities contains **90%** of the same services as the overall averages.

Services for Towns: 5,000 – 6,000 People

There are **5 towns** within the referenced database that contain 5,000 – 6,000 people. The average number of services offered for these size towns is **12**. All of the available services offered in the towns this size are listed below in Table 6.7.

Table D.6 – Services of Facilities in towns between 5,000 – 6,000 people

Services	# of Facilities Offered at	% of Facilities
In/Out Surgical	5	9%
Lab (Clinical)	5	9%
Pharmacy	5	9%
Radiology	5	9%
Emergency Department	4	7%
Obstetrics	4	7%
Pediatric	4	7%
Respiratory Care	4	7%
Neonatal Nursery	3	5%
Physical Therapy	3	5%
Social Services	3	5%
Dietary	2	4%
ICU	2	4%
Long Term Care	2	4%
Occupational Therapy	2	4%
Rehab	2	4%
Speech Pathology	2	4%
Coronary Care	1	2%
Home Care	1	2%
Nuclear Medicine	1	2%

This segment of facilities contains **80%** of the same services as the overall averages.

Services for Towns: 6,000 – 10,000 People

There are **9 towns** within the referenced database that contain 6,000 – 10,000 people. The average number of services offered for these size towns is **11.33**. All of the available services offered in the towns this size are listed below in Table 6.8.

Table D.7 – Services of Facilities in towns between 6,000 – 10,000 people

Services	# of Facilities Offered at	% of Facilities
In/Out Surgical	9	16%
Lab (Clinical)	9	16%
Radiology	9	16%
Pharmacy	8	14%
Respiratory Care	8	14%
Emergency Department	7	12%
ICU	7	12%
Obstetrics	6	11%
Social Services	6	11%
Dietary	5	9%
Physical Therapy	5	9%
Long Term Care	4	7%
Nuclear Medicine	4	7%
Pediatric	4	7%
Coronary Care	3	5%
Lab (Anatomical)	2	4%
Rehab	2	4%
Dental	1	2%
Neonatal Nursery	1	2%
Sleep Lab	1	2%
Speech Pathology	1	2%

This segment of facilities contains **90%** of the same services as the overall averages.

APPENDIX E

DESIGN EXERCISE:

BUILDING PROGRAM STUDY PARAMETERS &

COMPLETE DETAILED FINAL FACILITY PROGRAM

Study Parameters

To aid in the creation of the healthcare portion of the facility program for the 35 bed proposed hospital, a total of five building program models were acquired and studied. They were then compared against each other and study averages were created to help come up with the spaces needed and their relative sizes. A summary of the study is shown here in Table E.1. The averages were used as starting points for constructing the final 35 bed building program to be used in the design exercise contained in this thesis.

Table E.1 – Facility Program Study w/ Square Footages by Department

Departments	Washington Public Hospital District CAH Plan			AIA Universal CAH Plan	Magee General Hospital	Averages	x 1.5
	Minimum	Average	Generous				
General Public Services	510	610	725	1,800	800	889	1,334
Emergency Services	730	640	1,700	3,400	3,860	2,066	3,099
Laboratory Services	285	285	285	700	1,050	521	782
Radiology	850	850	1,310	2,650	4,500	2,032	3,048
Medical Records	690	755	920	700	1,000	813	1,220
Inpatient Care (35 beds)	7,185	8,710	10,310	9,462	10,900	9,313	13,970
Dietary Services*	520	1,100	1,220	1,400	1,600	1,168	1,752
Surgical Services	2,060	2,060	2,700	4,400	6,900	3,624	5,436
Administrative Services	650	750	1,550	2,500	2,200	1,530	2,295
Materials Management	500	500	500	1,000	1,200	740	1,110
Pharmacy	250	250	250	350	600	340	510
Maintenance Services	500	500	1,000	1,250	1,200	890	1,335
Laundry Services	-	1,200	1,200	-	1,330	1,243	1,865
Clinic	-	-	-	3,700	4,100	3,900	5,850
Respiratory Care	-	-	-	-	1,600	1,600	2,400
Pediatrics	-	-	-	-	-	-	-
ICU (4 beds)	-	-	-	-	-	-	-
Physical Therapy	-	-	-	-	5,000	5,000	7,500
Obstetrics	-	-	-	1,000	5,250	3,125	4,688
Nuclear Medicine	-	-	-	-	750	750	1,125
Initial Totals	**14,730**	**18,210**	**23,670**	**33,312**	**53,840**	**39,545**	**59,317**
x Circulation Factor	1.5	1.5	1.5	1.5	1.5	1.5	
Totals (Sq. Ft.)	**22,095**	**27,315**	**35,505**	**49,968**	**80,760**	**59,317**	

Building Program Study – 1st Source

Three of these facility programs came from a study of creating a critical access hospital footprint which was sponsored by the Association of Washington Public Hospital Districts.[149] Those building programs are listed in Table D.3, D.4, & D.5.

Table E.2 – Minimum Sized Critical Access Hospital Building Program

Function/Room	Number of Spaces*	Size/Area	Total Area	Area by Functional Group
General Public Services				**510**
Lobby/Vestibule	1	40	40	
Waiting (20 people)	1	200	200	
Reception/Admitting	1	150	150	
Restrooms (M & F)	2	50	100	
Wheelchair Alcove	1	20	20	
Emergency Services				**730**
Patient Entry	1	40	40	
Receiving/Triage	1	150	150	
Nurse Station			0	
Major Treatment			0	
Minor Treatment	2	150	300	
Decontamination Area	1	100	100	
Patient Toilet	1	50	50	
Family Waiting			0	
Public Toilet			0	
Clean Utility			0	
Soiled Utility			0	
Housekeeping	1	90	90	
Equipment Storage			0	
Laboratory Services				**285**
Laboratory	1	110	110	
Blood Draw/Waiting	1	100	100	
Soiled Utility	1	75	75	

[149] KDF Architecture, and Mitchell Madsen, Evenson & Conrad, PLLC.,. "Creating the Cah Footprint: …a Capital and Facilities Toolbox." Association of Washington Public Hospital Districts, 2006. [cited 4 February 2007]

Table E.2 – Minimum Sized Critical Access Hospital Building Program – Cont.

Function/Room	Number of Spaces*	Size/Area	Total Area	Area by Functional Group
Imaging Services				**850**
Film Processing	1	75	75	
Dressing	2	50	100	
Image Viewing	1	60	60	
Waiting			0	
Patient Toilet	1	50	50	
Storage	1	90	90	
Administrative	1	115	115	
Radiographic Room	1	360	360	
Medical Records				**690**
Record Storage (Active)	1	250	250	
Record Storage (Archived)	1	150	150	
General Clerical	1	45	45	
Data Entry/Transcription	1	90	90	
Dictation	1	35	35	
Medical Records Director	1	120	120	
Inpatient Care Unit				**7,185**
Patient Rooms (Double)	35	160	5600	
Patient Bathing	1	140	140	
Patient Toilets	5	75	375	
Medication	1	60	60	
Confidential Communication	1	180	180	
Nourishment	1	120	120	
Nurses' Station	1	230	230	
Soiled Utility	1	80	80	
Clean Utility	1	110	110	
Housekeeping	1	90	90	
Equipment Storage	1	200	200	
Waiting Area			0	
Dietary Services*				**520**
Receiving	1	75	75	
Kitchen	1	200	200	
Housekeeping	1	30	30	
Dry Storage	1	100	100	
Dietitian Workstation	1	115	115	

Table E.2 – Minimum Sized Critical Access Hospital Building Program – Cont.

Function/Room	Number of Spaces*	Size/Area	Total Area	Area by Functional Group
Surgical Services				**2,060**
Operating Room	2	400	800	
Scrub Area	1	40	40	
Sub-sterile	1	150	150	
Central Sterile	1	200	200	
Anesthesia	1	90	90	
Staff Locker/Lounge	1	120	120	
Staff Toilet	1	60	60	
Nurses' Station	1	100	100	
Dictation/Charting	1	100	100	
Soiled Utility	1	80	80	
Clean Utility	1	110	110	
Housekeeping	1	90	90	
Equipment Storage	1	120	120	
Administrative Services				**650**
Reception			0	
Administrator	1	125	125	
Clinical Services Manager	1	125	125	
Business Manager/CFO	1	100	100	
Human Resources Manager	1	100	100	
Unassigned Office Space	2	100	200	
Clerical Support	1	300	300	
Administrative Workroom	1	100	100	
Conference Room	1	300	300	
Materials Management	**1**	**500**	**500**	**500**
Pharmacy	**1**	**250**	**250**	**250**
Maintenance Services	**1**	**500**	**500**	**500**
		SUBTOTAL - NET AREA		**14,730**
		Net to Gross Multiplier at 1.5		x 1.5
		TOTAL - GROSS AREA		**22,095**
* Dietary limited to pre-packaged meals in disposable serving trays (e.g. "airline" style)				
** Assumptions: Laundry outsourced, no contiguous Long Term Care or Clinic services, no central boiler/chiller				

Table E.3 – Average Sized Critical Access Hospital Building Program

Function/Room	Number of Spaces*	Size/Area	Total Area	Area by Functional Group
General Public Services				610
Lobby/Vestibule	1	40	40	
Waiting (30 people)	1	300	300	
Reception/Admitting	1	150	150	
Restrooms (M & F)	2	50	100	
Wheelchair Alcove	1	20	20	
Emergency Services				**640**
Patient Entry	1	40	40	
Receiving/Triage	1	150	150	
Nurse Station			0	
Major Treatment			0	
Minor Treatment	2	150	300	
Decontamination Area	1	100	100	
Patient Toilet	1	50	50	
Family Waiting			0	
Public Toilet			0	
Clean Utility			0	
Soiled Utility			0	
Equipment Storage			0	
Laboratory Services				**285**
Laboratory	1	110	110	
Blood Draw/Waiting	1	100	100	
Soiled Utility	1	75	75	
Imaging Services				**850**
Film Processing	1	75	75	
Dressing	2	50	100	
Image Viewing	1	60	60	
Waiting			0	
Patient Toilet	1	50	50	
Storage	1	90	90	
Administrative	1	115	115	
Radiographic Room	1	360	360	

Table E.3 – Average Sized Critical Access Hospital Building Program – Cont.

Function/Room	Number of Spaces*	Size/Area	Total Area	Area by Functional Group
Medical Records				**755**
Record Storage (Active)	1	315	315	
Record Storage (Archived)	1	150	150	
General Clerical	1	45	45	
Data Entry/Transcription	1	90	90	
Dictation	1	35	35	
Medical Records Director	1	120	120	
Inpatient Care Unit				**8,710**
Patient Rooms (Single)	35	190	6650	
Patient Rooms (Double)		265	0	
Patient Bathing	1	140	140	
Patient Toilets	15	60	900	
Medication	1	60	60	
Confidential Communication	1	180	180	
Nourishment	1	120	120	
Nurses' Station	1	230	230	
Soiled Utility	1	80	80	
Clean Utility	1	110	110	
Housekeeping	1	90	90	
Equipment Storage	1	150	150	
Waiting Area			0	
Dietary Services				**1,100**
Receiving	1	75	75	
Kitchen	1	600	600	
Housekeeping	1	30	30	
Dietary Staff Toilet/Lockers	1	60	60	
Dry Storage	1	100	100	
Dietitian Workstation	1	115	115	
General Staff Dining	1	120	120	

Table E.3 – Average Sized Critical Access Hospital Building Program – Cont.

Function/Room	Number of Spaces*	Size/Area	Total Area	Area by Functional Group
Surgical Services				**2,060**
Operating Room	2	400	800	
Scrub Area	1	40	40	
Sub-sterile	1	150	150	
Central Sterile	1	200	200	
Anesthesia	1	90	90	
Staff Locker/Lounge	1	120	120	
Staff Toilet	1	60	60	
Nurses' Station	1	100	100	
Dictation/Charting	1	100	100	
Soiled Utility	1	80	80	
Clean Utility	1	110	110	
Housekeeping	1	90	90	
Equipment Storage	1	120	120	
Administrative Services				**750**
Reception			0	
Administrator	1	125	125	
Clinical Services Manager	1	125	125	
Business Manager/CFO	1	100	100	
Human Resources Manager	1	100	100	
Environmental Services Manager	1	100	100	
Unassigned Office Space	2	100	200	
Clerical Support	1	300	300	
Administrative Workroom	1	100	100	
Conference Room (Small)	1	100	100	
Conference Room (Large)	1	300	300	

Table E.3 – Average Sized Critical Access Hospital Building Program – Cont.

Function/Room	Number of Spaces*	Size/Area	Total Area	Area by Functional Group
Materials Management	1	500	500	**500**
Pharmacy	1	250	250	**250**
Maintenance Services	1	500	500	**500**
Laundry Services	1	1200	1200	**1,200**
		SUBTOTAL - NET AREA		**18,210**
		Net to Gross Multiplier at 1.5		x 1.5
		TOTAL - GROSS AREA		**27,315**
Note: Does include space for central boiler/chiller plant				

Table E.4 – Generous Sized Critical Access Hospital Building Program

Function/Room	Number of Spaces*	Size/Area	Total Area	Area by Functional Group
General Public Services				**725**
Lobby/Vestibule	1	40	40	
Waiting (20 people)	1	200	200	
Reception	1	150	150	
Admitting	1	100	100	
Restrooms (M & F)	2	50	100	
Auxiliary Gift Shop	1	115	115	
Wheelchair Alcove	1	20	20	
Emergency Services				**1,700**
Patient Entry	1	40	40	
Receiving/Triage	1	150	150	
Nurse Station	1	150	150	
Major Treatment	1	400	400	
Minor Treatment	2	150	300	
Decontamination Area	1	100	100	
Patient Toilet	1	50	50	
Family Waiting	1	100	100	
Restrooms (M & F)	2	50	100	
Soiled Utility	1	80	80	
Clean Utility	1	110	110	
Equipment Storage	1	120	120	
Laboratory Services				**285**
Laboratory	1	110	110	
Blood Draw/Waiting	1	100	100	
Soiled Utility	1	75	75	
Imaging Services				**1,310**
Film Processing	1	75	75	
Dressing	2	50	100	
Image Viewing	1	60	60	
Waiting	1	100	100	
Patient Toilet	1	50	50	
Storage	1	90	90	
Administrative	1	115	115	
CT	1	360	360	
Radiographic Room	1	360	360	

Table E.4 – Generous Sized Critical Access Hospital Building Program – Cont.

Function/Room	# of Spaces*	Size/Area	Total Area	Area by Functional Group
Medical Records				**920**
Record Storage (Active)	1	315	315	
Record Storage (Archived)	1	315	315	
General Clerical	1	45	45	
Data Entry/Transcription	1	90	90	
Dictation	1	35	35	
Medical Records Director	1	120	120	
Inpatient Care Unit				**10,310**
Patient Rooms (Single)	35	230	8050	
Patient Rooms (Double)	0	265	0	
Patient Bathing	1	140	140	
Patient Toilets	15	60	900	
Medication	1	60	60	
Confidential Communication	1	180	180	
Nourishment	1	120	120	
Nurses' Station	1	230	230	
Soiled Utility	1	80	80	
Clean Utility	1	110	110	
Housekeeping	1	90	90	
Equipment Storage	1	150	150	
Waiting	1	100	100	
Restrooms (M & F)	2	50	100	
Dietary Services				**1,220**
Receiving	1	75	75	
Kitchen	1	600	600	
Housekeeping	1	30	30	
Dietary Staff Toilet/Lockers	1	60	60	
Dry Storage	1	100	100	
Dietitian Workstation	1	115	115	
General Staff/Public Dining	1	240	240	

Table E.4 – Generous Sized Critical Access Hospital Building Program – Cont.

Function/Room	# of Spaces	Size/Area	Total Area	Area by Functional Group
Surgical Services				**2,700**
Operating Room	2	400	800	
Scrub Area	1	40	40	
Sub-sterile	1	150	150	
Central Sterile	1	200	200	
Anesthesia	1	90	90	
PACU	1	500	500	
Staff Locker/Lounge	2	100	200	
Staff Toilet	2	60	120	
Nurses' Station	1	100	100	
Dictation/Charting	1	100	100	
Soiled Utility	1	80	80	
Clean Utility	1	110	110	
Housekeeping	1	90	90	
Equipment Storage	1	120	120	
Administrative Services				**1,550**
Administrator	1	125	125	
Clinical Services Manager	1	125	125	
Business Manager/CFO	1	100	100	
Human Resources Manager	1	100	100	
Environmental Services Manager	1	100	100	
Unassigned Office Space	2	100	200	
Clerical Support	1	300	300	
Administrative Workroom	1	100	100	
Conference Room (Small)	1	100	100	
Conference Room (Large)	1	300	300	
Materials Management	1	500	500	**500**
Pharmacy	1	250	250	**250**
Maintenance Services	1	1000	1000	**1,000**
Laundry Services	1	1200	1200	**1,200**
		SUBTOTAL - NET AREA		**23,670**
	Net to Gross Multiplier at 1.5			x 1.5
		TOTAL - GROSS AREA		**35,505**
Note: Does include space for central boiler/chiller plant				

Building Program Study – 2nd Source

The second source for the building program information comes from the AIA Universal Design for a Critical Access Hospital. BBH Design, an architectural firm out of North Carolina, "was contracted by the U.S. Department of Health and Human Services to develop a prototype hospital for rural America... BBH designed the prototype as a Green Guide for Healthcare pilot project."[150] They developed a 15 bed, single story model, as well as a two story, 25 bed model. The 25 bed model is used for this study and is shown in Table E.5.

[150] Buckner, Lee, and Dan Hightower. "Universal Design for the Rural Environment." The American Institute of Architects,, www.aia.org. [cited 18 January 2007]

Table E.5 – AIA Universal Critical Access Hospital Facility Program

1st Floor	
Circulation	7,400
Circulation 2	4,200
Emergency	3,400
Clinic	3,700
Radiology	2,650
Surgery	3,100
Staff Lockers	800
Obstetrics	1,000
Pharmacy	350
Materials	1,000
Mechanical	1,250
Food Service	1,400
Administration	2,500
Lab	700
Medical Records	700
Total Floor	**34,150**

Table E.5 – AIA Universal Critical Access Hospital Facility Program – Cont.

2nd Floor	
Circulation	3,700
Circulation 2	5,400
Patient rooms (31 @ 252 sq. ft. ea.)	7,812
Patient rooms (2 @ 325 sq. ft. ea.)	650
Patient rooms (2 @ 500 sq. ft. ea.)	1,000
Nurse Area	3,000
Misc.	300
Total Floor	**21,862**
Total Building	**56,012**

Building Program Study – 3rd Source

The third source for the building program information comes from a building program created by Stegenga + PARTNERS, an architectural firm specializing in healthcare based in Alpharetta, Georgia, for Magee General Hospital in Magee, MS. This is a 53 bed rural hospital facility that is undergoing 5 phases of construction that will eventually result in a full replacement hospital built on the current hospital site. The building program information for this project is listed in Table E.6.

Table E.6 – Magee General Hospital Facility Program

Description	area	#	subtotal	Proposed
VESTIBULE	120	1	120	
subtotal (vestibule)				**120**
LOBBY				
Open area	600	1	600	
Seating	20	30	600	
Information/volunteers	35	2	100	
Wheelchair/miscellaneous storage	50	1	100	
Gift/Flower Kiosk	45	1	45	
Toilets	50	3	150	
subtotal (lobby)				**1,595**
ADMINISTRATION				
Subwait	20	6	120	
Corporate Compliance	132	1	132	
Dir. Business Operations	132	1	132	
Dir. Human Resources	132	1	132	
Dir. of Finances	144	1	144	
Toilet	50	1	50	
Administrator	225	1	225	
Toilet	50	1	50	
Admin secretary	85	1	85	
Admin file room	120	1	120	
MIS	120	1	120	
Computer/security hardware	180	1	180	
MIS work room	200	1	200	
Copy/work/print	120	1	120	
Storage	144	1	144	
Board Room	24	24	576	
Conference room	180	1	180	
subtotal (administration)				**2,710**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
BUSINESS OFFICE				
Admissions Clerk	65	1	65	
Insurance Clerk	65	3	195	
Outpatient Clerk	65	1	65	
Risk Manager	65	1	65	
Data Processor	65	2	130	
Collections	65	1	65	
PBX Operators	55	5	275	
ER Clerk	65	2	130	
Clerk Operator	65	1	65	
File Clerk	65	1	65	
Copy/fax/printer	65	2	130	
Work area	55	1	55	
Storage	100	1	100	
Toilet	50	1	50	
Financial records	15	18	270	
subtotal (business office)				**1,725**
CHAPEL				
Entry	50	1	50	
Prayer booth	50	1	50	
Chapel	256	1	256	
subtotal (chapel)				**356**
CENTRAL SUPPLY				
Loading Dock	240	1	240	
Storage room	2000	1	2,000	
Sterile storage	1200	1	1,200	
Package breakdown	180	1	180	
Toilet	50	1	50	
Director	65	1	65	
Printing/binding	180	1	180	
Print storage	120	1	120	
subtotal (central supply)				**4,035**
CORPORATE HEALTH (marketing)				
Directors office			100	
storage supplies			75	
subtotal (corporate health)				**175**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
DIETARY				
Storage room	800	1	800	
Janitor closet	45	1	45	
Mop closet	25	1	25	
Break area	120	1	120	
Toilet	50	1	50	
Day pantry	120	1	120	
Dining	2,100	1	2,100	
Private dining	180	2	360	
Dish cleaning	168	1	168	
Kitchen	250	1	250	
Service line	324	1	324	
Manager	100	1	100	
Closet	40	1	40	
Carts	120	1	120	
subtotal (dietary)				**4,622**
EMERGENCY ROOM				
Waiting room	18	24	432	
Patient toilets	50	2	100	
Vending area	25	1	25	
Reception	65	1	65	
Office work/copy	100	1	100	
Triage/interview	80	2	160	
Treatment room	120	3	360	
Trauma room	210	2	420	
Nurse stations	45	6	270	
Dictation	45	2	90	
Equipment storage	100	1	100	
Read room	90	1	90	
Supplies Omnicell	180	1	180	
Staff Toilets	50	1	50	
Dirty linens	65	1	65	
Clean linens	65	1	65	
Stretcher/wheelchairs	30	3	90	
subtotal (emergency room)				**2,662**
FOUNDATION				
Display	100	1	100	
Office	120	1	120	
Files/storage	45	1	45	
subtotal (foundation)				**265**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
HOUSE KEEPING				
Dirty linen	160	1	160	
Clean linen	200	1	200	
Supplies	350	1	350	
Laundry/equipment	160	1	160	
Directors office	180	1	180	
Garbage	180	1	180	
Misc. storage	100	1	100	
subtotal (house keeping)				**1,330**
LAB				
Waiting area	20	12	240	
Reception	65	1	65	
Blood draw (quiet room)	65	1	65	
Blood draw	40	1	40	
Chemistry	100	1	100	
Reclining EKG	80	1	80	
Screening toilet	50	1	50	
Screening interview	80	1	80	
Lab work station	99	6	594	
Blood bank	100	1	100	
Microbiology	120	1	120	
Director	132	1	132	
Assistant director	132	1	132	
Secretary	80	1	80	
Copy fax file cab storage	120	1	120	
Storage	100	1	100	
subtotal (lab)				**2,098**
LABOR & DELIVERY				
Waiting area	20	8	160	
Labor & Delivery rooms	180	4	720	
Treatment rooms	108	3	324	
Nurse station	55	3	165	
Toilet	50	1	50	
Refreshment station	80	1	80	
Dirty linen	35	1	35	
Clean linen	45	1	45	
Dictation	35	2	70	
Storage/supplies	100	1	100	
Janitor closet	35	1	35	
subtotal (labor & delivery)				**1,624**
NURSERY				
Nurse work area	55	3	165	
Nursery	20	10	200	
Dictation area	45	1	45	
Storage	100	1	100	
subtotal (nursery)				**510**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
MAINTENANCE				
HVAC supplies	150	1	150	
Plumbing supplies	150	1	150	
Electrical supplies	150	1	150	
General supplies	200	1	200	
Toilet	50	1	50	
Staff area	180	1	180	
Carpenter shop	200	1	200	
Tools	120	1	120	
subtotal (administration)				**1,200**
MEDICAL RECORDS				
Waiting room	20	6	120	
Director	144	1	144	
Clerk/reception	65	1	65	
Utilization review	80	1	80	
IQH abstractor	80	1	80	
Coding	65	2	130	
Transcriptionist	65	4	260	
Copy/fax/printer	140	1	140	
File clerk	65	1	65	
Medical records clerk	65	2	130	
Break room	168		-	
Toilet	50	1	50	
Medical records	2,000	1	2,000	
Work area	220	1	220	
subtotal (medical records)				**3,484**
NURSING				
Director	180	1	180	
Toilet	50	1	50	
Assistant director	120	1	120	
In-service training	18	12	216	
Infection control/QA	120	1	120	
Scheduler/sec.	100	1	100	
Storage	120	1	120	
subtotal (nursing)				**906**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
OUTPATIENT CLINIC				
Waiting room	20	35	700	
Reception	65	2	130	
Cashier/reappoint	65	2	130	
Copy/fax/work	75	1	75	
Scheduler/sec.	85	1	85	
Nurse station	65	4	260	
Storage	50	6	300	
MD office	120	4	480	
Exams	120	12	1,440	
Procedures	168	2	336	
Toilet	50	4	200	
subtotal (outpatient clinic)				**4,136**
PHARMACY				
Pharmacy	560	1	560	
Hood room	65	1	65	
Controlled substances	65	1	65	
Office manager	120	1	120	
Pharmacist	120	1	120	
Toilet	50	1	50	
Break room	120		-	
Storage	140	1	140	
Receiving	50	1	50	
Carts	20	1	20	
subtotal (pharmacy)				**1,190**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
PHYSICAL THERAPY				
Outpatient side				
	18	16	288	
	65	1	65	
	80	1	80	
	80	1	80	
	90	1	90	
	120	1	120	
	45	4	180	
	45	2	90	
	100	6	600	
	144	1	144	
	50	1	50	
	45	24	1,080	
	180	1	180	
			3,047	
Inpatient side				
	180	1	180	
	45	15	675	
	120	1	120	
	45	3	135	
	45	1	45	
	90	1	90	
			1,245	
Shared				
	15	2	30	
	15	3	45	
	50	1	50	
	20	20	400	
	800		-	
	1200		-	
	35	1	35	
	150	1	150	
subtotal (pharmacy)			**710**	**5,002**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
RADIOLOGY				
Waiting room	20	12	240	
Clerk/reception	65	1	65	
Director	132	1	132	
Clinical instructor	66	2	132	
Work area	80	1	80	
General Radiography	180	2	360	
Dressing rooms	25	3	75	
Patient toilet	50	2	100	
Controls	35	2	70	
Read room	120	1	120	
Film storage	220	1	220	
Tech work area	180	1	180	
Printer/processor	25	2	50	
Ultrasound	172	1	172	
Ultrasound toilet	50	1	50	
Mammography	168	1	168	
	75	1	75	
	100	1	100	
	100	1	100	
	25	2	50	
MRI	252	1	252	
	100	1	100	
	100	1	100	
	25	2	50	
	50	1	50	
CT	240	1	240	
	100	1	100	
	30	2	60	
	120	1	120	
	50	1	50	
Nuclear	240	1	240	
	80	1	80	
	30	1	30	
	50	1	50	
Tech sleep room	100	1	100	
Tech toilet/shower at sleep room	75	1	75	
Wheelchair/stretcher holding	35	4	140	
Storage	120	1	120	
subtotal (radiology)				**4,496**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
RESPIRATORY				
Director office	100	1	100	
Work stations	35	2	70	
Work area	180	1	180	
Storage	144	1	144	
Toilet	50	1	50	
Cylinder storage	45	1	45	
subtotal (respiratory)				**589**
PATIENT ROOMS				
Supervisor	100	1	100	
Janitor closet	45	1	45	
Room cluster				
	65	3	195	
	40	1	40	
	30	3	90	
	120	1	120	
	80	1	80	
	30	1	30	
	35	1	35	
	55	1	55	
	100	1	100	
	100	1	100	
	80	1	80	
	300	35	10,500	
subtotal (patient rooms)				**11,570**
SENIOR CARE				
Social worker office	90	1	90	
Nurse station	40	3	120	
Supplies	80	1	80	
Toilet	50	1	50	
Patient shower	90	1	90	
Day Room	320	1	320	
Dirty linen	25	1	25	
Clean linen	35	1	35	
Patient laundry	75	1	75	
Patient room	180	8	1,440	
Patient toilet	50	8	400	
Storage	75	1	75	
Director	100	1	100	
subtotal (senior care)				**2,900**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
SURGERY				
Admissions area	80	1	80	
Pre-op	90	7	630	
Nurse station	120	1	120	
Storage/supplies/warmer	100	1	100	
Anesthesia work room	132	1	132	
Patient dressing rooms	40	2	80	
Patient toilet	50	1	50	
Male doctor/staff				
	168	1		
	50	1		
	45	1		
			263	
Female doctor/staff				
	192	1		
	50	1		
	45	1		
			287	
Lounge	168	1	168	
Sterile janitor closet	75	1	75	
Operatory	400	4	1,600	
Procedures	220	1	220	
Substerile	160	2	320	
Contaminated	180	1	180	
Instrument cleaning	240	1	240	
Sterile storage	300	1	300	
Equipment storage	120	1	120	
Post op recovery	90	7	630	
ICU/recovery	180	2	360	
Nurse station/refreshment	120	1	120	
Dirty laundry/trash	100	1	100	
Clean linens	180	1	180	
Stretcher/wheelchair storage	30	6	180	
Discharge lounge	144	1	144	
Anesthesiologist	144	1	144	
Director office	144	1	144	
subtotal (surgery)				**6,967**
SLEEP ROOM				
Bedroom	144	1	144	
Toilet w/ shower	75	1	75	
Living room/lounge	168	1	168	
subtotal (sleep room)				**387**

Table E.6 – Magee General Hospital Facility Program – Cont.

Description	area	#	subtotal	Proposed
SUPPORT				
Mechanical	250	3	750	
Electrical/phone	250	3	750	
Sprinkler Risers	65	3	195	
Medical gases	100	3	300	
subtotal (support)				**1,995**
SOCIAL SERVICES				
Director of Social Services	100	1	100	
Volunteer lounge	168	1	168	
Storage	100	1	100	
subtotal (volunteers)				**368**
				69,017
Circulation Factor	0.38			26,226
Exterior Wall Factor	0.04			2,761
Vertical Circulation Factor	0.03			2,071
FACILITY TOTAL				**100,075**

35 Bed Facility Final Program

HOSPITAL FUNCTIONS

DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
LOBBY					
Seating	20	30	600		
Information/volunteers	40	1	40		
Wheelchair/miscellaneous. storage	40	1	40		
Toilets	60	4	240		
Sub Total				920	920
Circulation				35%	322
Total Lobby					**1,242**
ADMINISTRATION					
Subwait	20	6	120		
Corporate Compliance	100	1	100		
Dir. Business Operations	120	1	120		
Dir. Human Resources	120	1	120		
Director of Finances	120	1	120		
Toilet	50	1	50		
Administrator	180	1	180		
Toilet	50	1	50		
Admin secretary	80	1	80		
Admin file room	120	1	120		
MIS	120	1	120		
MIS work room	180	1	180		
Computer/security hardware	120	1	120		
Copy/work/print	100	1	100		
Storage	100	1	100		
Board Room	24	16	384		
Conference Room	160	1	160		
Break Room	120	1	120		
Sub Total				2,344	2,344
Circulation				35%	820
Total Administration					**3,164**
MEDICAL RECORDS					
Director	120	1	120		
Clerk/reception	50	1	50		
Utilization review	50	1	50		
IQH abstractor	50	1	50		
Coding	50	1	50		
Transcriptionist	50	2	100		
Copy/fax/printer	80	1	80		
File clerk	50	1	50		
Medical records clerk	50	1	50		
Medical records	700	1	700		
Sub Total				1,300	1,300
Circulation				35%	455
Total Medical Records					**1,755**

DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
MATERIALS MANAGEMENT					
Storage room	500	1	500		
Sterile storage	250	1	250		
Package breakdown	100	1	100		
Director	80	1	80		
Printing/binding	80	1	80		
Sub Total				1,010	1,010
Circulation				35%	354
Total Materials Management					**1,364**
LAUNDRY					
Dirty linen	160	1	160		
Clean linen	200	1	200		
Supplies	300	1	300		
Laundry/equipment	160	1	160		
Garbage	120	1	120		
Misc. storage	100	1	100		
Sub Total				1,040	1,040
Circulation				35%	364
Total Laundry					**1,404**
MAINTENANCE					
HVAC supplies	120	1	120		
Plumbing supplies	120	1	120		
Electrical supplies	120	1	120		
General supplies	120	1	120		
Staff area	120	1	120		
Carpenter shop	180	1	180		
Tools	120	1	120		
SUPPORT					
Mechanical	200	3	600		
Electrical/phone	200	3	600		
Sprinkler Risers	60	3	180		
Medical gases	80	3	240		
Sub Total				2,520	2,520
Circulation				35%	882
Total Maintenance					**3,402**
DIETARY					
Storage room	550	1	550		
Janitor closet	60	1	60		
Toilet	50	1	50		
Day pantry	120	1	120		
Dish cleaning	150	1	150		
Kitchen	250	1	250		
Manager	80	1	80		
Sub Total				1,260	1,260
Circulation				35%	441
Total Dietary					**1,701**

DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
OUTPATIENT CLINIC					
Waiting room	20	24	480		
Reception	65	2	130		
Cashier/reappoint	65	2	130		
Copy/fax/work	80	1	80		
Scheduler/sec.	85	1	85		
Nurse station	65	2	130		
Storage	50	2	100		
MD office	120	2	240		
Exams	120	6	720		
Procedures	180	2	360		
Toilet	60	4	240		
RESPIRATORY					
Work stations	40	2	80		
Work area	100	2	200		
Storage	100	1	100		
Cylinder storage	45	1	45		
Sub Total				3,120	3,120
Circulation				35%	1,092
Total Outpatient Clinic					**4,212**
EMERGENCY ROOM					
Waiting room	18	20	360		
Patient toilets	60	2	120		
Reception	65	1	65		
Office work/copy	100	1	100		
Triage/interview	80	2	160		
Treatment room	120	3	360		
Trauma room	210	2	420		
Nurse stations	50	3	150		
Dictation	50	2	100		
Equipment storage	100	1	100		
Read room	80	1	80		
Supplies Omnicell	145	1	145		
Staff Toilets	50	1	50		
Dirty linens	65	1	65		
Clean linens	65	1	65		
Stretcher/wheelchairs	30	2	60		
Sub Total				2,400	2,400
Circulation				35%	840
Total Emergency Room					**3,240**

DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
SURGERY					
Admissions area	65	1	65		
Pre-op	90	5	450		
Nurse station	80	1	80		
Charting/Dictation	80	1	80		
Anesthesia work room	80	1	80		
Male doctor/staff					
Dressing rooms	120	1	120		
Toilet	50	1	50		
Shower	45	1	45		
Female doctor/staff					
Dressing rooms	120	1	120		
Toilet	50	1	50		
Shower	45	1	45		
Operatory	400	2	800		
Procedures	200	1	200		
Sub-sterile	160	2	320		
Contaminated	180	1	180		
Instrument cleaning	150	1	150		
Sterile storage	200	1	200		
Equipment storage	100	1	100		
PACU	90	5	450		
Nurse station/refreshment	80	1	80		
Dirty laundry/trash	100	1	100		
Clean linens	100	1	100		
Stretcher/wheelchair storage	30	4	120		
Sub Total				3,985	3,985
Circulation				35%	1,395
Total Surgery					**5,380**
RADIOLOGY					
Clerk/reception	50	1	50		
Patient toilet	60	1	60		
Director	100	1	100		
General Radiography (X-ray)	180	2	360		
Controls	35	2	70		
Dressing rooms	25	2	50		
Dark room/Film Storage	120	1	120		
Read room	80	1	80		
Work area	80	1	80		
Staff Toilet	50	1	50		
Ultrasound	160	1	160		
Ultrasound toilet	60	1	60		
Mobile ultrasound/injection	100	1	100		
Mammography	160	1	160		
Dressing room	25	2	50		
CT	240	1	240		
Controls	50	1	50		
Dressing rooms	25	2	50		
Nuclear	180	1	180		
Hot lab	65	1	65		
Dressing rooms	25	1	25		
Wheelchair/stretcher holding	30	4	120		
Sub Total				2,280	2,280
Circulation				35%	798
Total Radiology					**3,078**

DESCRIPTION		Unit area	Qty	Area	Proposed	Notes
OBSTETRICS						
	Waiting area	20	10	200		
	Labor & Delivery rooms	180	2	360		
	Treatment rooms	108	3	324		
	Nurse station	60	2	120		
	Toilet	60	1	60		
	Dirty linen	40	1	40		
	Clean linen	50	1	50		
	Dictation	45	2	90		
	Storage/supplies	80	1	80		
	NURSERY					
	Nurse work area	50	2	100		
	Nursery	20	10	200		
	Dictation area	45	1	45		
	Storage	80	1	80		
	Sub Total				1,749	1,749
	Circulation				35%	612
	Total Lab					**2,361**
LAB						
	Reception/Waiting	100	1	100		
	Blood draw	100	1	100		
	Screening toilet	60	1	60		
	Lab work station	80	4	320		
	Blood bank	100	1	100		
	Microbiology	80	1	80		
	Chemistry	80	1	80		
	Copy fax file cab storage	80	1	80		
	Storage	80	1	80		
	Sub Total				1,000	1,000
	Circulation				35%	350
	Total Lab					**1,350**
PHARMACY						
	Pharmacy	350	1	350		
	Hood room	70	1	70		
	Controlled substances	70	1	70		
	Pharmacist	100	1	100		
	Storage	80	1	80		
	Receiving	50	1	50		
	Carts	20	1	20		
	Sub Total				740	740
	Circulation				35%	259
	Total Lab					**999**

DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
PHYSICAL THERAPY					
Outpatient side					
Waiting room	18	16	288		
Receptionist	65	1	65		
Copy fax/work	80	1	80		
Medical records	80	1	80		
Office manager	100	1	100		
Therapist work stations	45	4	180		
Tech work stations	45	2	90		
Treatment room	108	6	648		
Pediatric equipment/room	120	1	120		
Patient toilet	60	1	60		
Gym	45	18	810		
Storage	180	1	180		
			2,701		
Inpatient side					
Hydrotherapy	180	1	180		
Gym	45	12	540		
Therapist work stations	45	2	90		
Patient toilet	60	1	60		
Treatment room	108	1	108		
			978		
Shared					
Wheelchair/ holding	15	2	30		
Modality carts	15	3	45		
Staff toilet	50	1	50		
Hot & cold packs	20	1	20		
Storage	80	1	80		
Sub Total				3,904	3,904
Circulation				35%	1,366
Total Physical Therapy					**5,270**

DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
PATIENT ROOMS					
Supervisor	100	1	100		
Janitor closet	45	3	135		
Nurse station	65	9	585		
IV work station	40	3	120		
Work area	35	9	315		
Supplies	100	3	300		
Dictation	35	3	105		
Dirty linen	35	3	105		
Clean linen	55	3	165		
Storage	100	3	300		
Med room	100	3	300		
Roll-in shower	80	1	80		
Patient rooms	250	31	7,750		
ICU Patient rooms	350	4	1,400		
Toilets	60	35	2,100		
Sub Total				13,860	13,860
Circulation				35%	4,851
Total Patient Rooms					**18,711**
TOTAL					
Exterior Walls				4%	2,345
Vertical Circulation				3%	1,759
HOSPITAL FUNCTIONS TOTAL					**62,738**

COMMUNITY FEATURES

DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
EDUCATIONAL CENTER					
Waiting - 15 seats at 20 sq. ft. per	20	20			
Wheelchair Storage	10	1			
Toilets	60	4			
Receptionist	50	1			
Copy/fax/work	50	1			
Computer/printers	50	1			
Storage	50	1			
Office manager	100	1			
Work Area	50	1			
Classroom	160	4			
Janitor closet	35	1			
Mechanical	40				
Electrical	40				
Sub Total				1,755	1,755
Circulation				20%	351
Total Educational Center					**2,106**

DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
FOOD COURT					
Restaurants - 200 sq. ft. per employee	200	3	600	4	
30 sq. ft. per customer	30	15	450	4	
Seating- 200 seats at 20 sq. ft. per	20	200	4,000		
Teaching Kitchen - 10 people @ 200 sq.	200	10	2,000		
Janitor closet	35	1	35		
Mechanical	40		40		
Electrical	40		40		
Sub Total				10,315	10,315
Circulation				35%	3,610
Total Food Court					**13,925**
RETAIL					
Misc. Retail Lease Spaces	1500	8	12,000		
Sub Total				12,000	12,000
Circulation				25%	3,000
Total Retail					**15,000**
ART GALLERY					
Display Area (per piece)	80	10	800		
Sub Total				800	800
Circulation				35%	280
Total Art Gallery					**1,080**

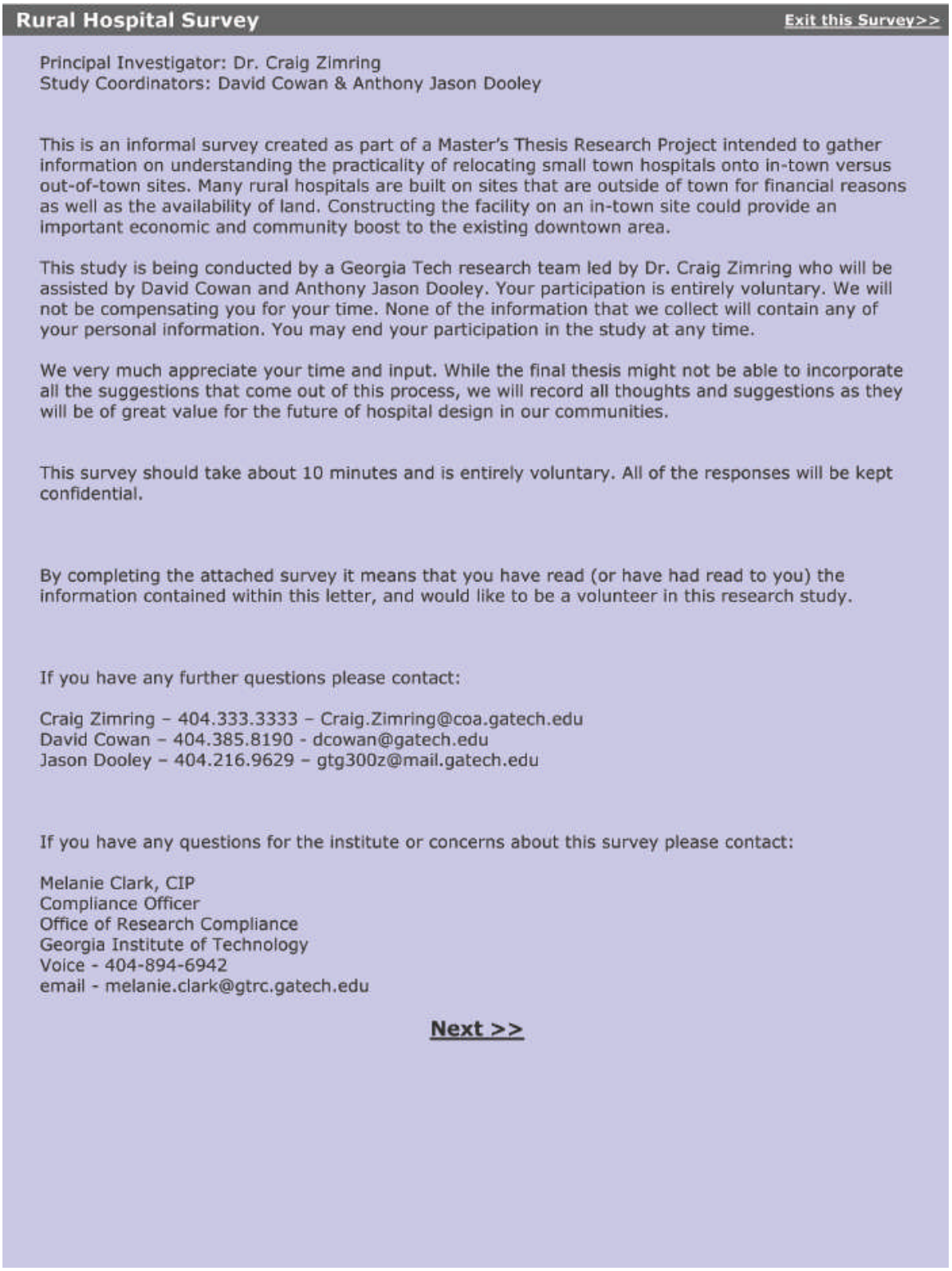
DESCRIPTION	Unit area	Qty	Area	Proposed	Notes
CHILD CARE CENTER					
Children in Center	80	30	2,400		
Janitor closet	35	1	35		
Mechanical	40		40		
Electrical	40		40		
Sub Total				2,515	2,515
Circulation				20%	503
Total Child Care Center					**3,018**
TOTAL					
Exterior Walls				4%	1,405
Vertical Circulation				3%	1,054
COMM. FEATURES					**37,588**
FACILITY GRAND TOTAL					**100,326**

APPENDIX F

INFORMATIONAL INTERNET-BASED SURVEY FOR:

SELECTED SAMPLE LIST OF HOSPITALS UNDER 60 BEDS W/

TOWN POPULATIONS UNDER 10,000 PEOPLE



Rural Hospital Survey Exit this Survey>>

Principal Investigator: Dr. Craig Zimring
Study Coordinators: David Cowan & Anthony Jason Dooley

This is an informal survey created as part of a Master's Thesis Research Project intended to gather information on understanding the practicality of relocating small town hospitals onto in-town versus out-of-town sites. Many rural hospitals are built on sites that are outside of town for financial reasons as well as the availability of land. Constructing the facility on an in-town site could provide an important economic and community boost to the existing downtown area.

This study is being conducted by a Georgia Tech research team led by Dr. Craig Zimring who will be assisted by David Cowan and Anthony Jason Dooley. Your participation is entirely voluntary. We will not be compensating you for your time. None of the information that we collect will contain any of your personal information. You may end your participation in the study at any time.

We very much appreciate your time and input. While the final thesis might not be able to incorporate all the suggestions that come out of this process, we will record all thoughts and suggestions as they will be of great value for the future of hospital design in our communities.

This survey should take about 10 minutes and is entirely voluntary. All of the responses will be kept confidential.

By completing the attached survey it means that you have read (or have had read to you) the information contained within this letter, and would like to be a volunteer in this research study.

If you have any further questions please contact:

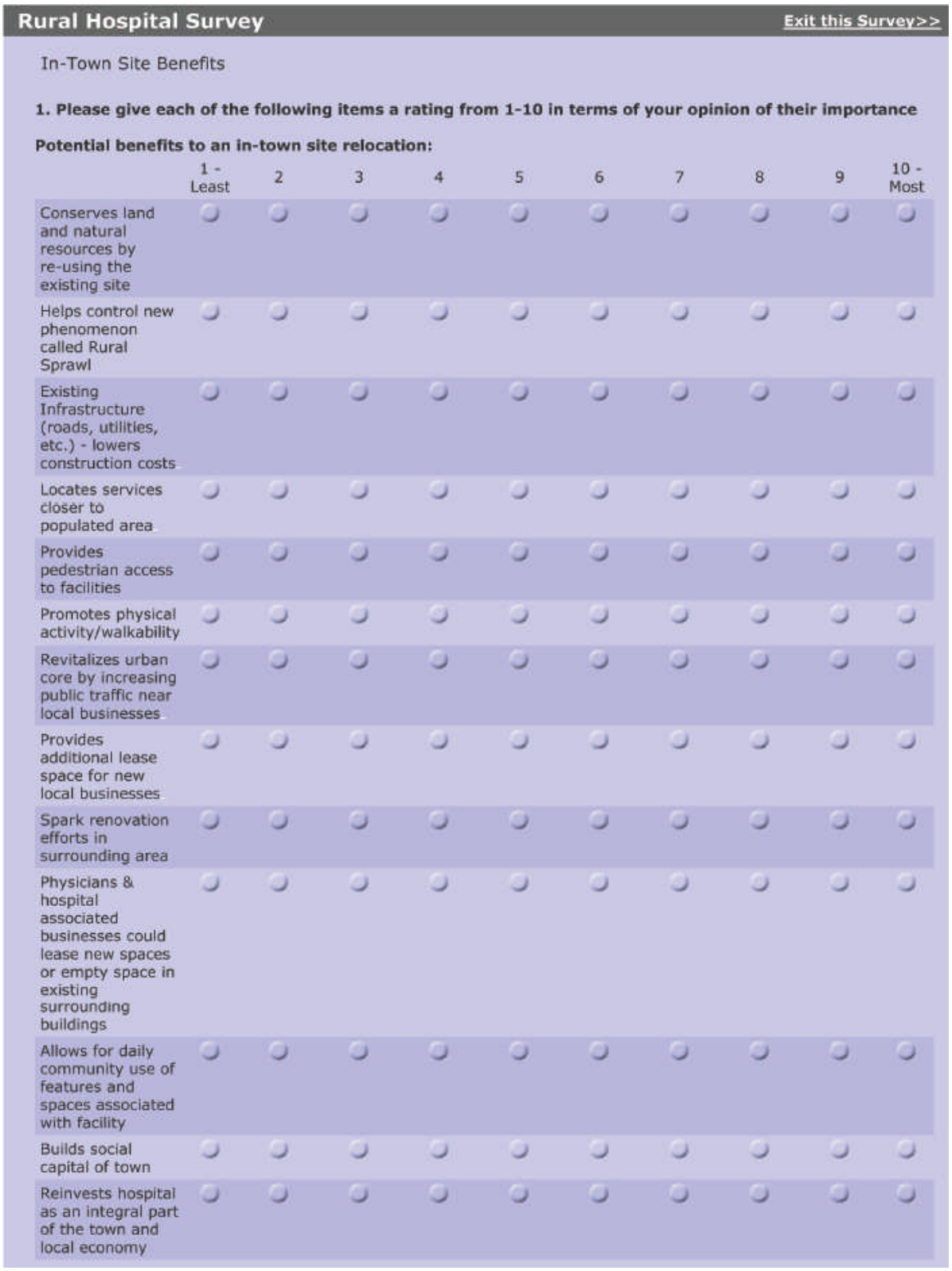
Craig Zimring – 404.333.3333 – Craig.Zimring@coa.gatech.edu
David Cowan – 404.385.8190 - dcowan@gatech.edu
Jason Dooley – 404.216.9629 – gtg300z@mail.gatech.edu

If you have any questions for the institute or concerns about this survey please contact:

Melanie Clark, CIP
Compliance Officer
Office of Research Compliance
Georgia Institute of Technology
Voice - 404-894-6942
email - melanie.clark@gtrc.gatech.edu

Next >>

Figure F.1 – Page 1 of 11 (Internet Survey)



Rural Hospital Survey Exit this Survey>>

In-Town Site Benefits

1. Please give each of the following items a rating from 1-10 in terms of your opinion of their importance

Potential benefits to an in-town site relocation:

	1 - Least	2	3	4	5	6	7	8	9	10 - Most
Conserves land and natural resources by re-using the existing site										
Helps control new phenomenon called Rural Sprawl										
Existing Infrastructure (roads, utilities, etc.) - lowers construction costs										
Locates services closer to populated area										
Provides pedestrian access to facilities										
Promotes physical activity/walkability										
Revitalizes urban core by increasing public traffic near local businesses										
Provides additional lease space for new local businesses										
Spark renovation efforts in surrounding area										
Physicians & hospital associated businesses could lease new spaces or empty space in existing surrounding buildings										
Allows for daily community use of features and spaces associated with facility										
Builds social capital of town										
Reinvests hospital as an integral part of the town and local economy										

Figure F.2 – Page 2 of 11 (Internet Survey)

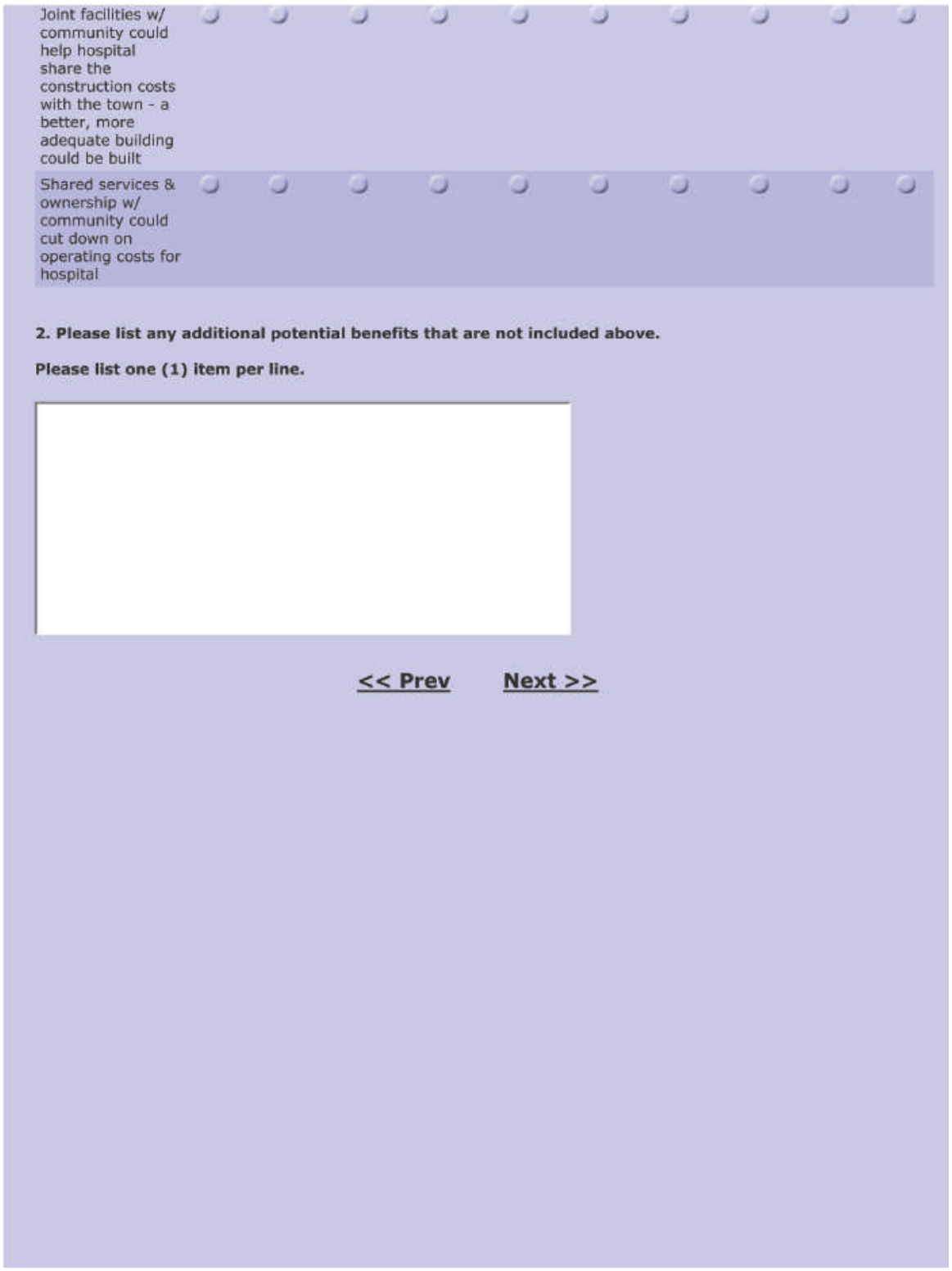


Figure F.3 – Page 3 of 11 (Internet Survey)

Rural Hospital Survey Exit this Survey>>

Potential Problems

3. Please give each of the following items a rating from 1-10 in terms of your opinion of their importance

Potential problems to consider when proposing an in-town site relocation:

	1 - Least	2	3	4	5	6	7	8	9	10 - Most
More expensive land										
Restricted or constrained site size										
Restricted or constrained facility size										
Services offered (size implications)										
Working within block structure of the town										
Less natural open or green space										
Will require a more expensive multi-story building (structure & vertical circulation)										
Departmental adjacencies are more difficult to achieve with multi-story design										
Height restrictions										
Noise - will create additional noise for neighbors										
Lack of visibility form a main circulation route										
Access- Vehicular										
Access - Ambulance										
Providing adequate on-site parking										
Built context constrains location of service areas (deliveries, trash, etc.)										

Figure F.4 – Page 4 of 11 (Internet Survey)

Figure F.5 – Page 5 of 11 (Internet Survey)

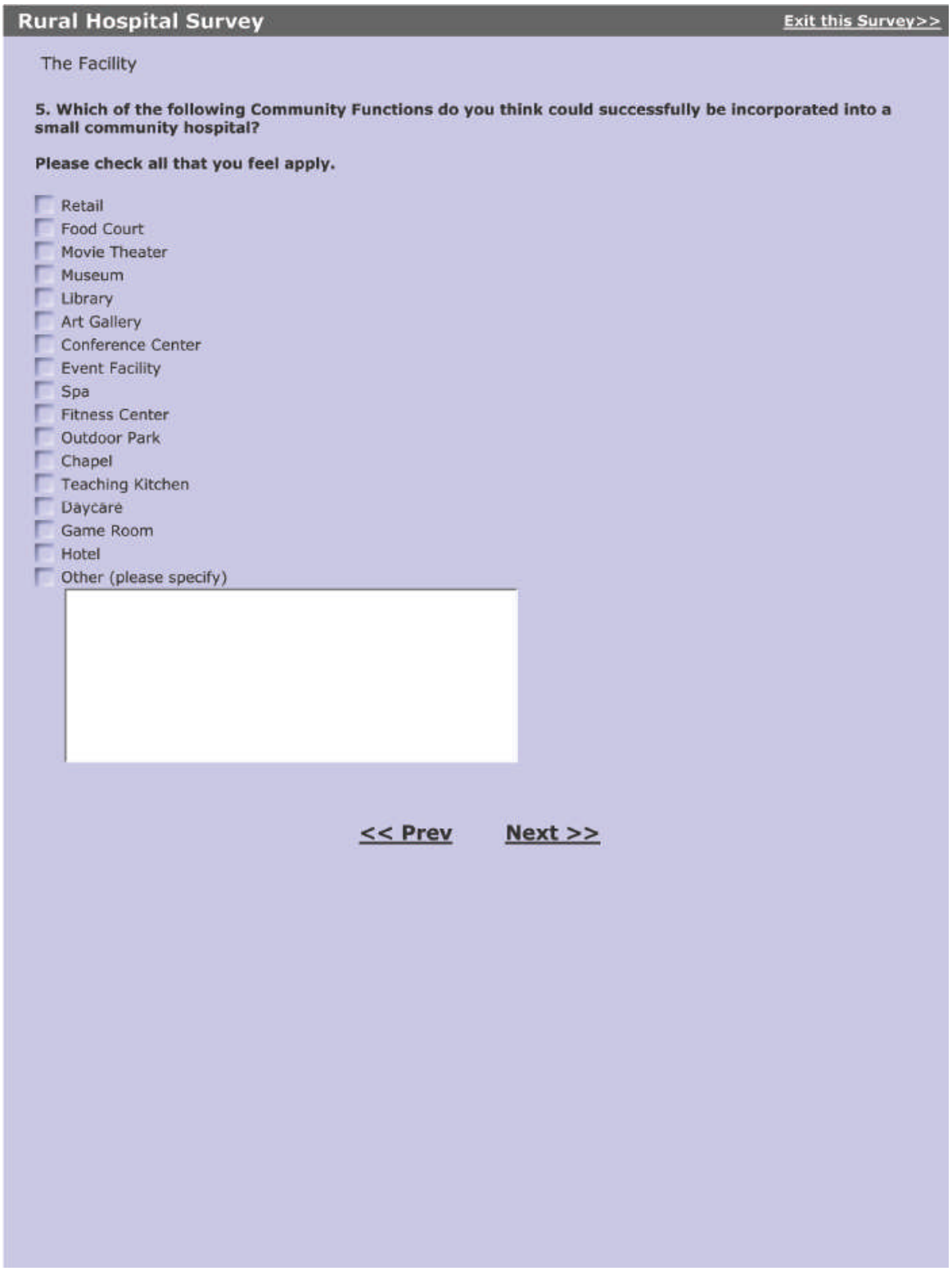


Figure F.6 – Page 6 of 11 (Internet Survey)

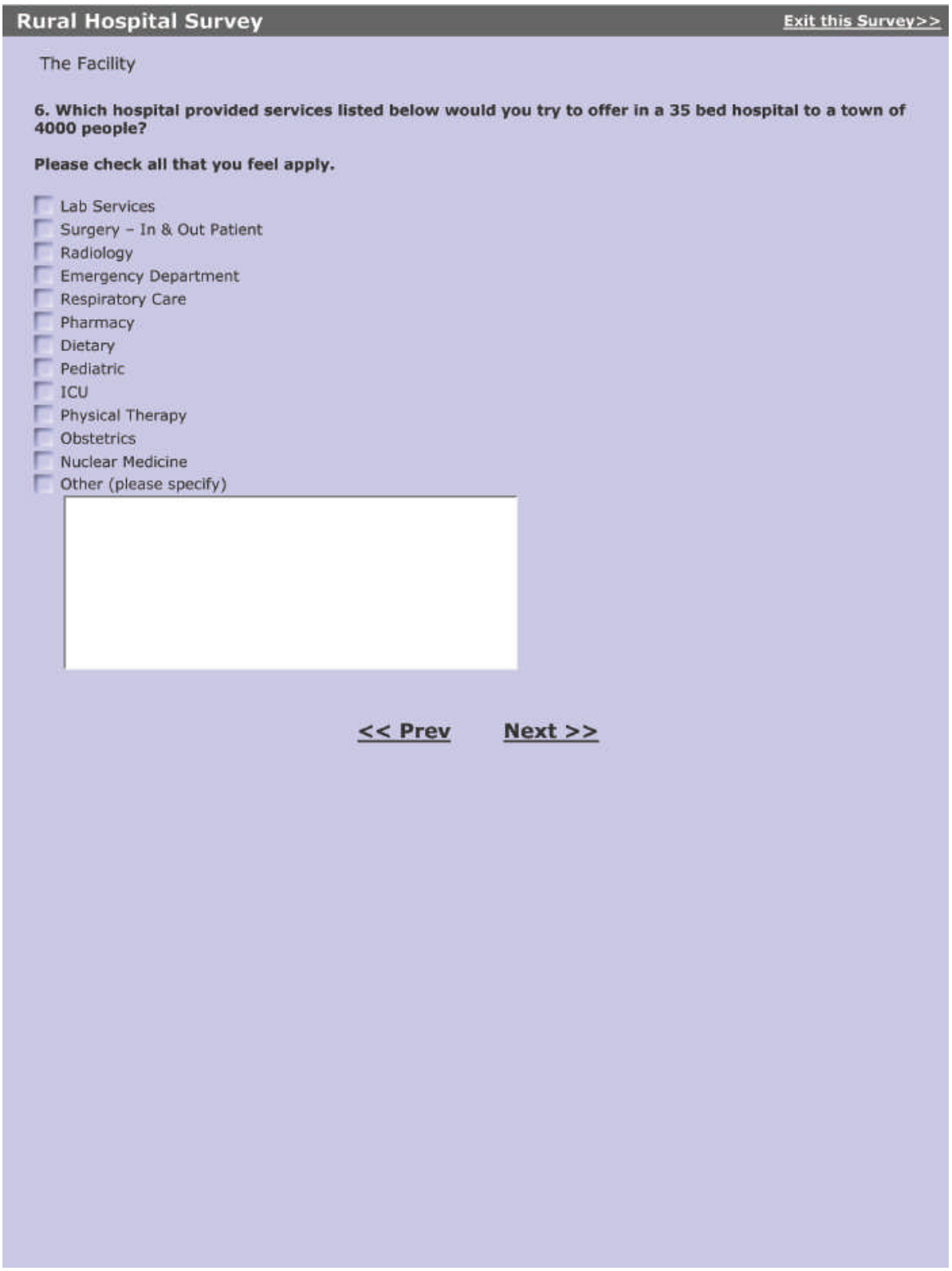


Figure F.7 – Page 7 of 11 (Internet Survey)

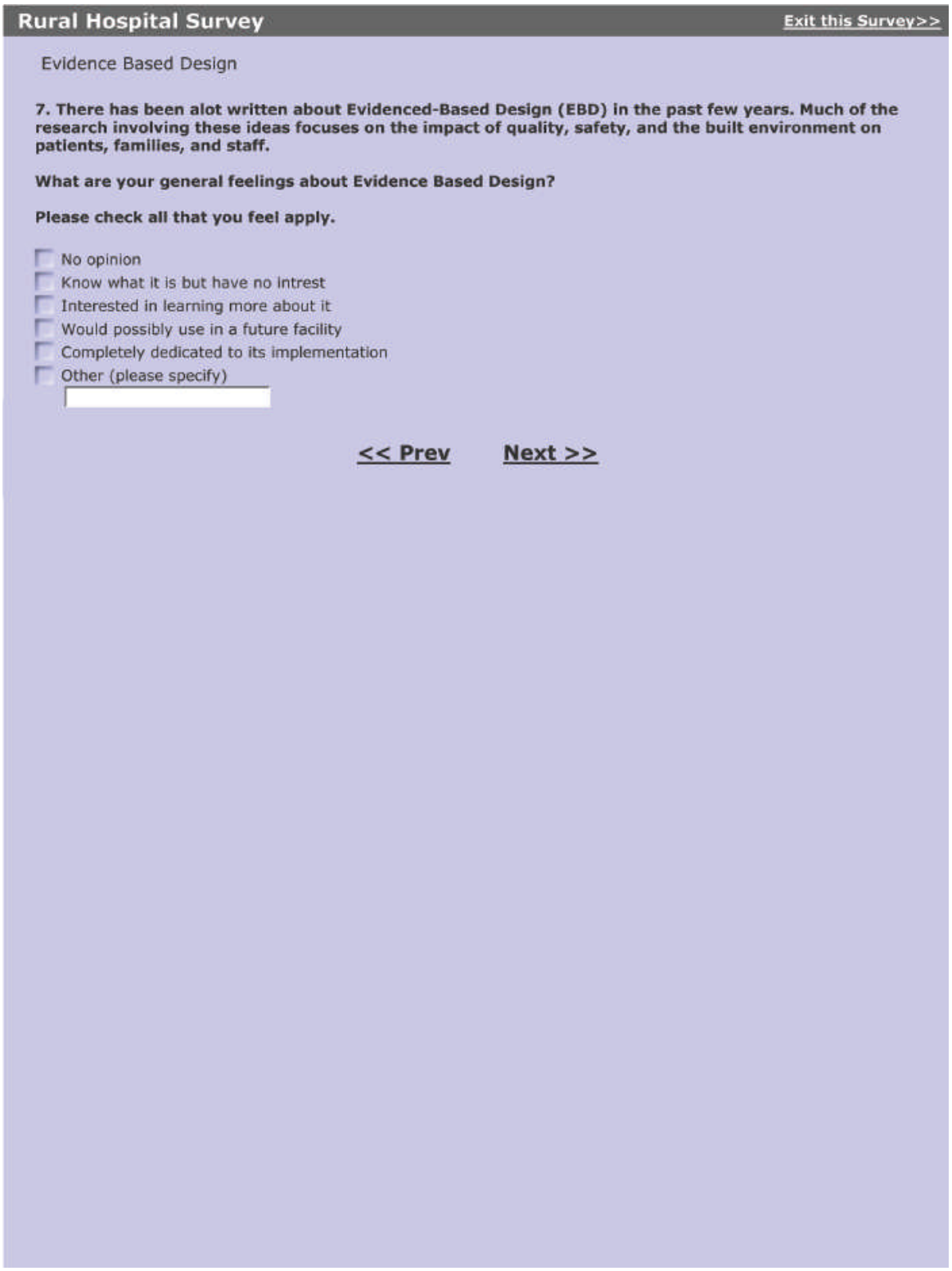


Figure F.8 – Page 8 of 11 (Internet Survey)

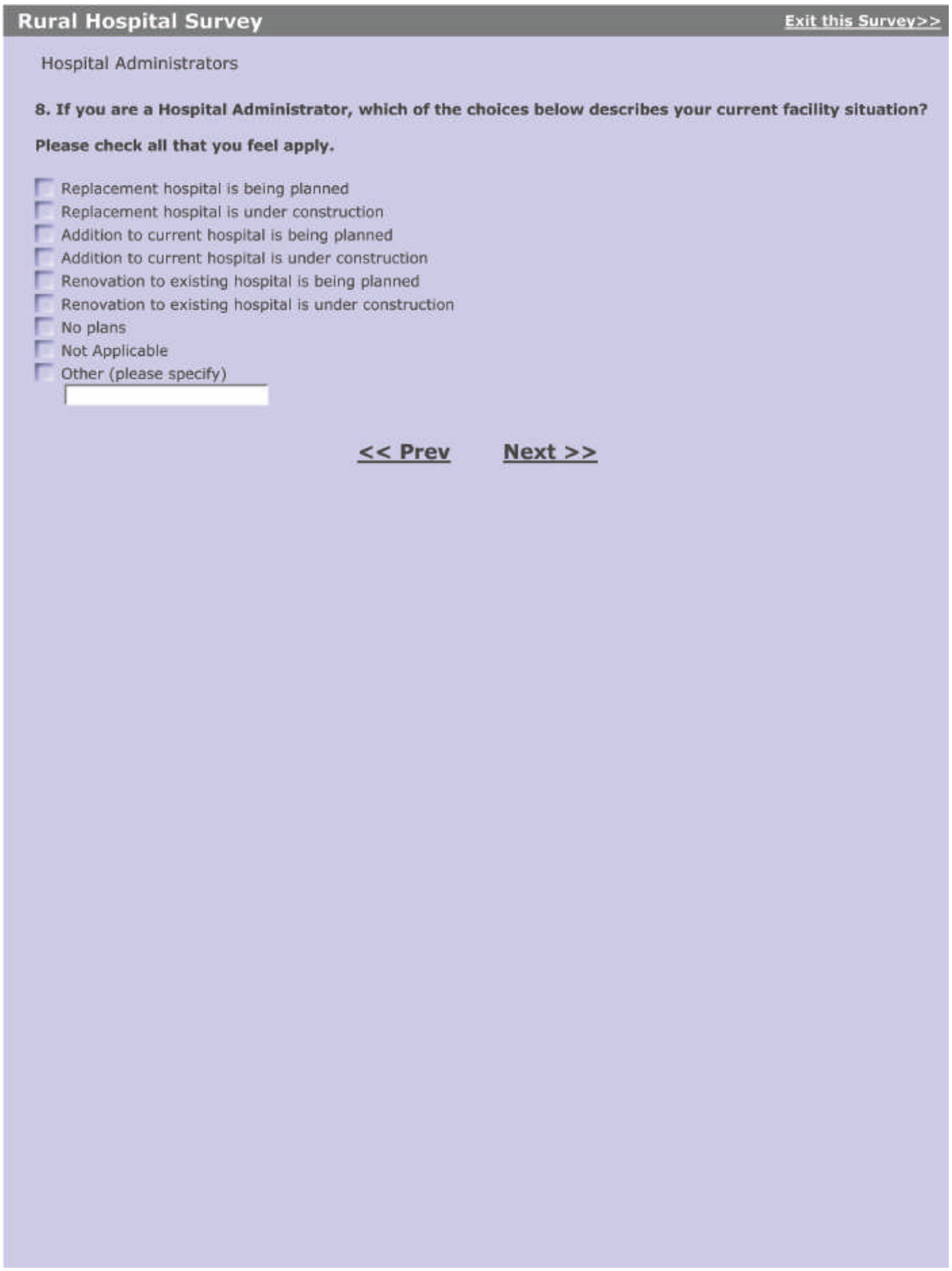


Figure F.9 – Page 9 of 11 (Internet Survey)

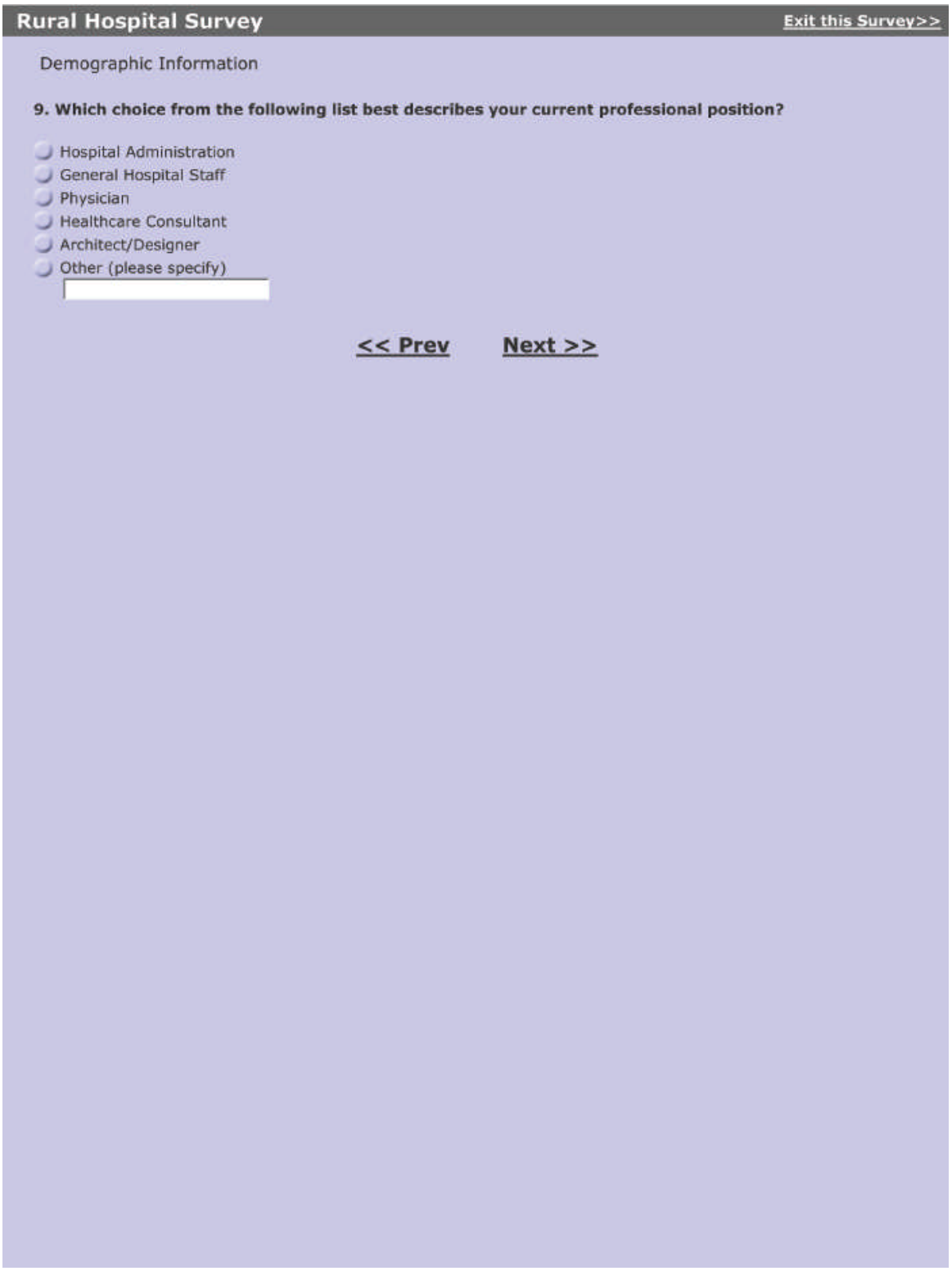


Figure F.10 – Page 10 of 11 (Internet Survey)

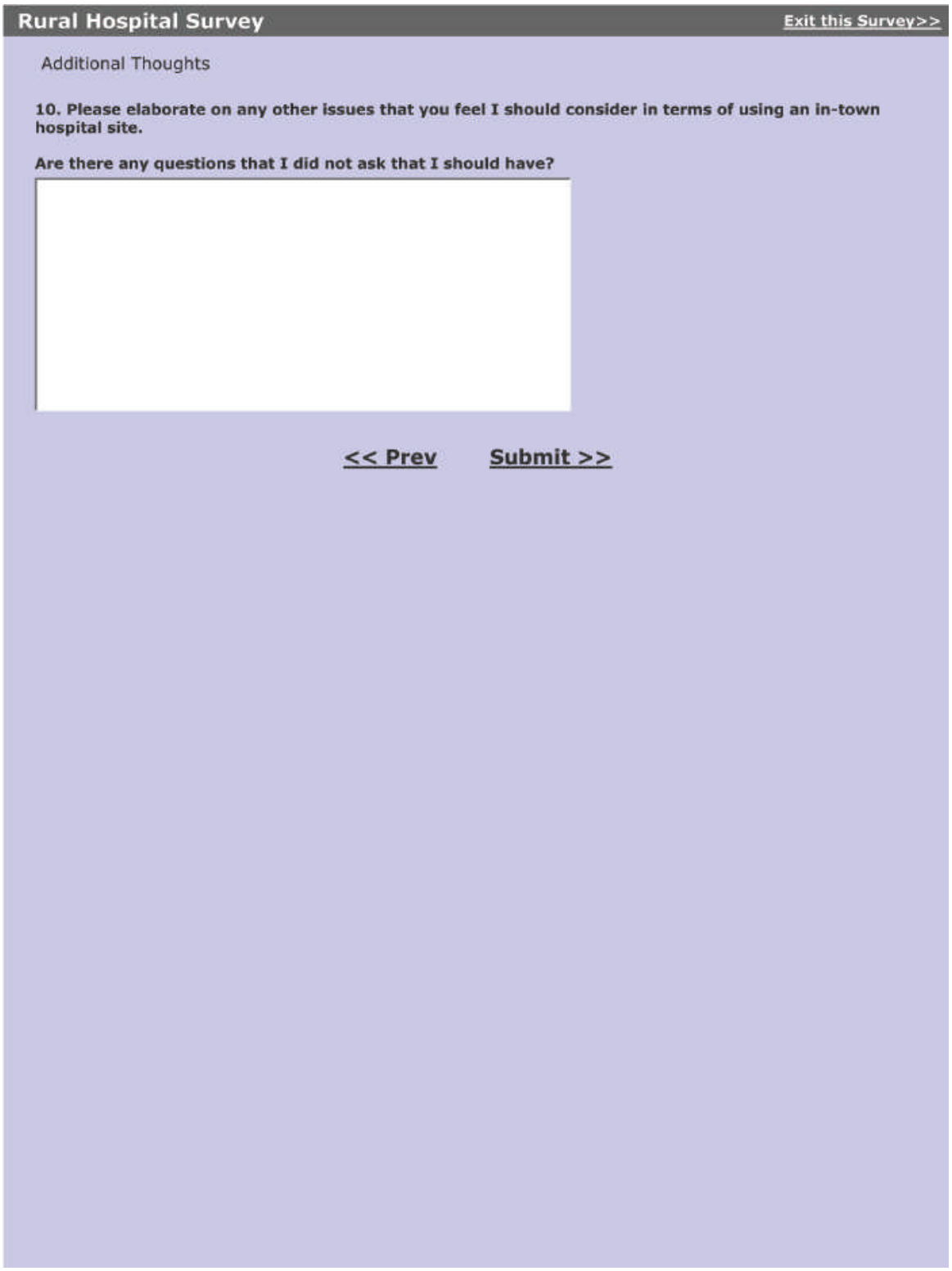


Figure F.11 – Page 11 of 11 (Internet Survey)

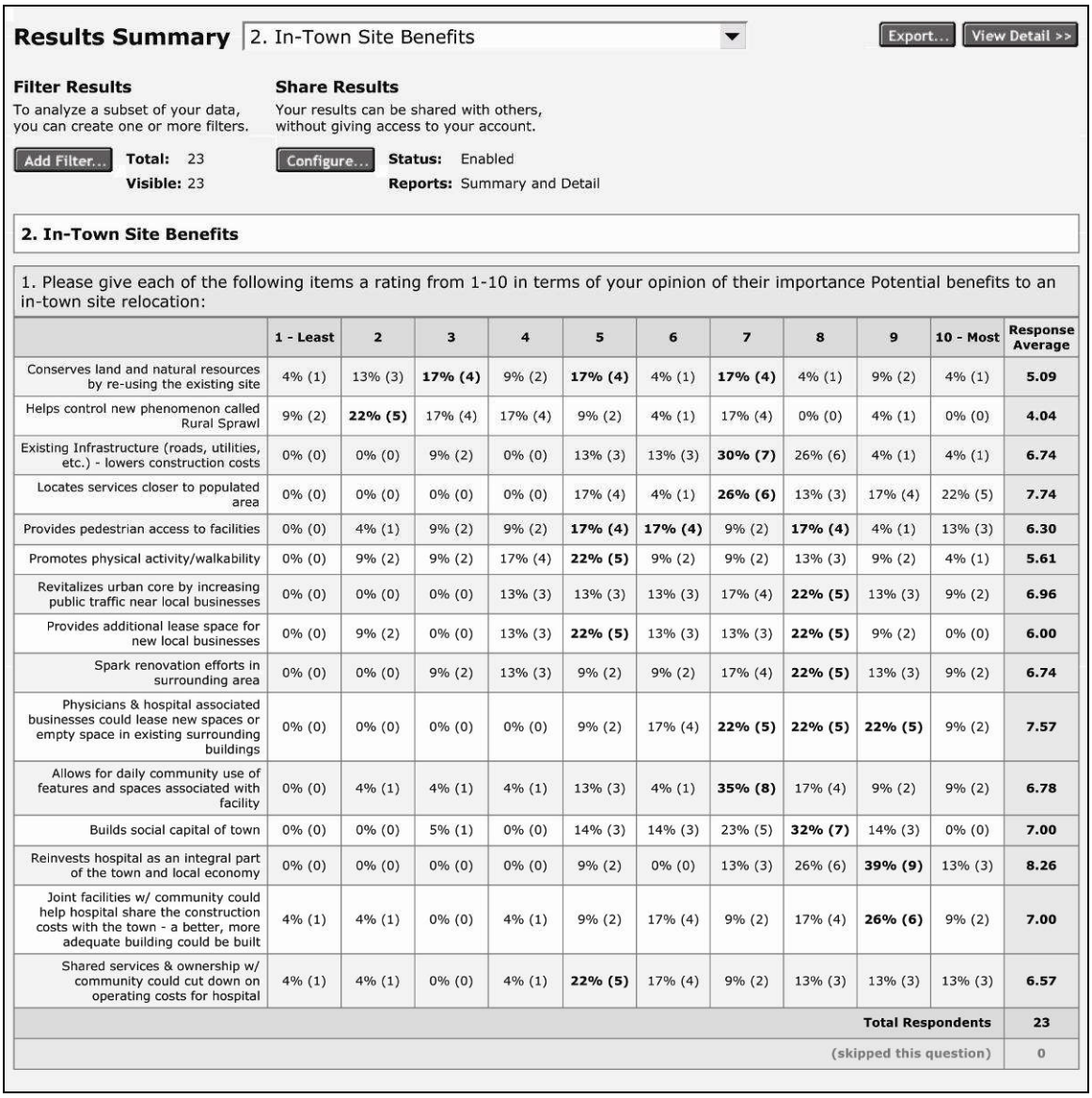
APPENDIX G

SURVEY RESULTS –

INFORMATIONAL INTERNET-BASED SURVEY FOR:

SELECTED SAMPLE LIST OF HOSPITALS UNDER 60 BEDS W/

TOWN POPULATIONS UNDER 10,000 PEOPLE



Results Summary 2. In-Town Site Benefits

Export... View Detail >>

Filter Results
To analyze a subset of your data, you can create one or more filters.

Add Filter... **Total:** 23 **Visible:** 23

Share Results
Your results can be shared with others, without giving access to your account.

Configure... **Status:** Enabled **Reports:** Summary and Detail

2. In-Town Site Benefits

1. Please give each of the following items a rating from 1-10 in terms of your opinion of their importance Potential benefits to an in-town site relocation:

	1 - Least	2	3	4	5	6	7	8	9	10 - Most	Response Average
Conserves land and natural resources by re-using the existing site	4% (1)	13% (3)	**17% (4)**	9% (2)	**17% (4)**	4% (1)	**17% (4)**	4% (1)	9% (2)	4% (1)	**5.09**
Helps control new phenomenon called Rural Sprawl	9% (2)	**22% (5)**	17% (4)	17% (4)	9% (2)	4% (1)	17% (4)	0% (0)	4% (1)	0% (0)	**4.04**
Existing Infrastructure (roads, utilities, etc.) - lowers construction costs	0% (0)	0% (0)	9% (2)	0% (0)	13% (3)	13% (3)	**30% (7)**	26% (6)	4% (1)	4% (1)	**6.74**
Locates services closer to populated area	0% (0)	0% (0)	0% (0)	0% (0)	17% (4)	4% (1)	**26% (6)**	13% (3)	17% (4)	22% (5)	**7.74**
Provides pedestrian access to facilities	0% (0)	4% (1)	9% (2)	9% (2)	**17% (4)**	**17% (4)**	9% (2)	**17% (4)**	4% (1)	13% (3)	**6.30**
Promotes physical activity/walkability	0% (0)	9% (2)	9% (2)	17% (4)	**22% (5)**	9% (2)	9% (2)	13% (3)	9% (2)	4% (1)	**5.61**
Revitalizes urban core by increasing public traffic near local businesses	0% (0)	0% (0)	0% (0)	13% (3)	13% (3)	13% (3)	17% (4)	**22% (5)**	13% (3)	9% (2)	**6.96**
Provides additional lease space for new local businesses	0% (0)	9% (2)	0% (0)	13% (3)	**22% (5)**	13% (3)	13% (3)	**22% (5)**	9% (2)	0% (0)	**6.00**
Spark renovation efforts in surrounding area	0% (0)	0% (0)	9% (2)	13% (3)	9% (2)	9% (2)	17% (4)	**22% (5)**	13% (3)	9% (2)	**6.74**
Physicians & hospital associated businesses could lease new spaces or empty space in existing surrounding buildings	0% (0)	0% (0)	0% (0)	0% (0)	9% (2)	17% (4)	**22% (5)**	**22% (5)**	**22% (5)**	9% (2)	**7.57**
Allows for daily community use of features and spaces associated with facility	0% (0)	4% (1)	4% (1)	4% (1)	13% (3)	4% (1)	**35% (8)**	17% (4)	9% (2)	9% (2)	**6.78**
Builds social capital of town	0% (0)	0% (0)	5% (1)	0% (0)	14% (3)	14% (3)	23% (5)	**32% (7)**	14% (3)	0% (0)	**7.00**
Reinvests hospital as an integral part of the town and local economy	0% (0)	0% (0)	0% (0)	0% (0)	9% (2)	0% (0)	13% (3)	26% (6)	**39% (9)**	13% (3)	**8.26**
Joint facilities w/ community could help hospital share the construction costs with the town - a better, more adequate building could be built	4% (1)	4% (1)	0% (0)	4% (1)	9% (2)	17% (4)	9% (2)	17% (4)	**26% (6)**	9% (2)	**7.00**
Shared services & ownership w/ community could cut down on operating costs for hospital	4% (1)	4% (1)	0% (0)	4% (1)	**22% (5)**	17% (4)	9% (2)	13% (3)	13% (3)	13% (3)	**6.57**
										Total Respondents	**23**
										(skipped this question)	0

Figure G.1 – Page 1 of 10 (Results - Internet Survey)

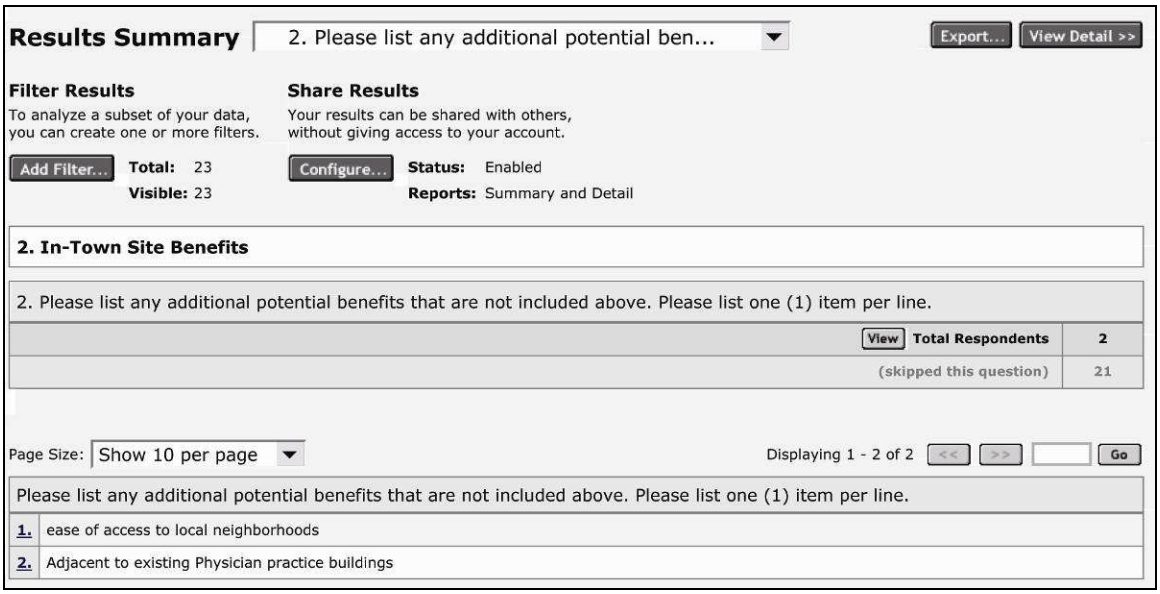
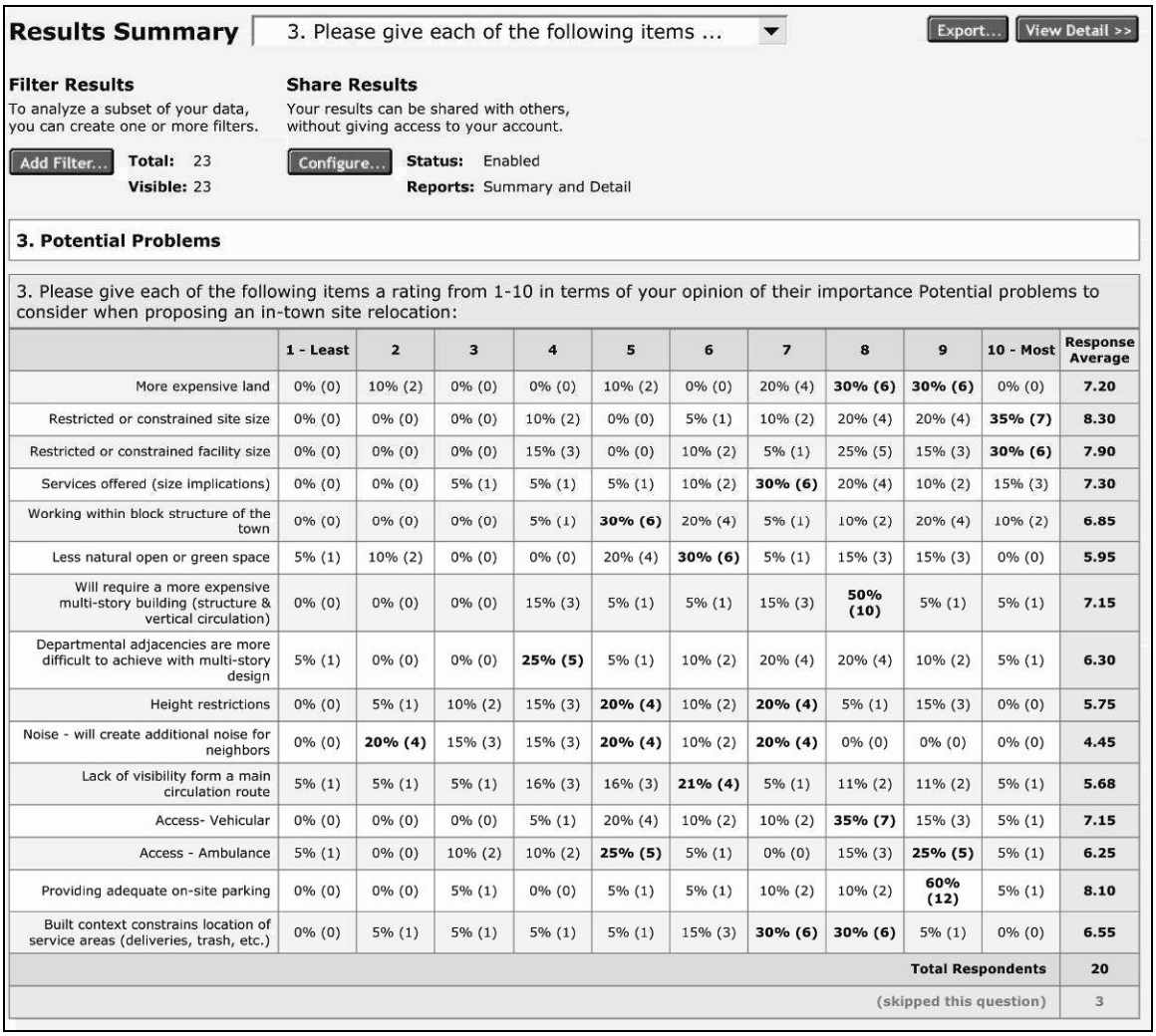


Figure G.2 – Page 2 of 10 (Results - Internet Survey)



Results Summary 3. Please give each of the following items ... Export... View Detail >>

Filter Results
To analyze a subset of your data, you can create one or more filters.

Add Filter... **Total:** 23 **Visible:** 23

Share Results
Your results can be shared with others, without giving access to your account.

Configure... **Status:** Enabled **Reports:** Summary and Detail

3. Potential Problems

3. Please give each of the following items a rating from 1-10 in terms of your opinion of their importance Potential problems to consider when proposing an in-town site relocation:

	1 - Least	2	3	4	5	6	7	8	9	10 - Most	Response Average
More expensive land	0% (0)	10% (2)	0% (0)	0% (0)	10% (2)	0% (0)	20% (4)	**30% (6)**	**30% (6)**	0% (0)	**7.20**
Restricted or constrained site size	0% (0)	0% (0)	0% (0)	10% (2)	0% (0)	5% (1)	10% (2)	20% (4)	20% (4)	**35% (7)**	**8.30**
Restricted or constrained facility size	0% (0)	0% (0)	0% (0)	15% (3)	0% (0)	10% (2)	5% (1)	25% (5)	15% (3)	**30% (6)**	**7.90**
Services offered (size implications)	0% (0)	0% (0)	5% (1)	5% (1)	5% (1)	10% (2)	**30% (6)**	20% (4)	10% (2)	15% (3)	**7.30**
Working within block structure of the town	0% (0)	0% (0)	0% (0)	5% (1)	**30% (6)**	20% (4)	5% (1)	10% (2)	20% (4)	10% (2)	**6.85**
Less natural open or green space	5% (1)	10% (2)	0% (0)	0% (0)	20% (4)	**30% (6)**	5% (1)	15% (3)	15% (3)	0% (0)	**5.95**
Will require a more expensive multi-story building (structure & vertical circulation)	0% (0)	0% (0)	0% (0)	15% (3)	5% (1)	5% (1)	15% (3)	**50% (10)**	5% (1)	5% (1)	**7.15**
Departmental adjacencies are more difficult to achieve with multi-story design	5% (1)	0% (0)	0% (0)	**25% (5)**	5% (1)	10% (2)	20% (4)	20% (4)	10% (2)	5% (1)	**6.30**
Height restrictions	0% (0)	5% (1)	10% (2)	15% (3)	**20% (4)**	10% (2)	**20% (4)**	5% (1)	15% (3)	0% (0)	**5.75**
Noise - will create additional noise for neighbors	0% (0)	**20% (4)**	15% (3)	15% (3)	**20% (4)**	10% (2)	**20% (4)**	0% (0)	0% (0)	0% (0)	**4.45**
Lack of visibility form a main circulation route	5% (1)	5% (1)	5% (1)	16% (3)	16% (3)	**21% (4)**	5% (1)	11% (2)	11% (2)	5% (1)	**5.68**
Access- Vehicular	0% (0)	0% (0)	0% (0)	5% (1)	20% (4)	10% (2)	10% (2)	**35% (7)**	15% (3)	5% (1)	**7.15**
Access - Ambulance	5% (1)	0% (0)	10% (2)	10% (2)	**25% (5)**	5% (1)	0% (0)	15% (3)	**25% (5)**	5% (1)	**6.25**
Providing adequate on-site parking	0% (0)	0% (0)	5% (1)	0% (0)	5% (1)	5% (1)	10% (2)	10% (2)	**60% (12)**	5% (1)	**8.10**
Built context constrains location of service areas (deliveries, trash, etc.)	0% (0)	5% (1)	5% (1)	5% (1)	5% (1)	15% (3)	**30% (6)**	**30% (6)**	5% (1)	0% (0)	**6.55**
										Total Respondents	**20**
										(skipped this question)	3

Figure G.3 – Page 3 of 10 (Results - Internet Survey)

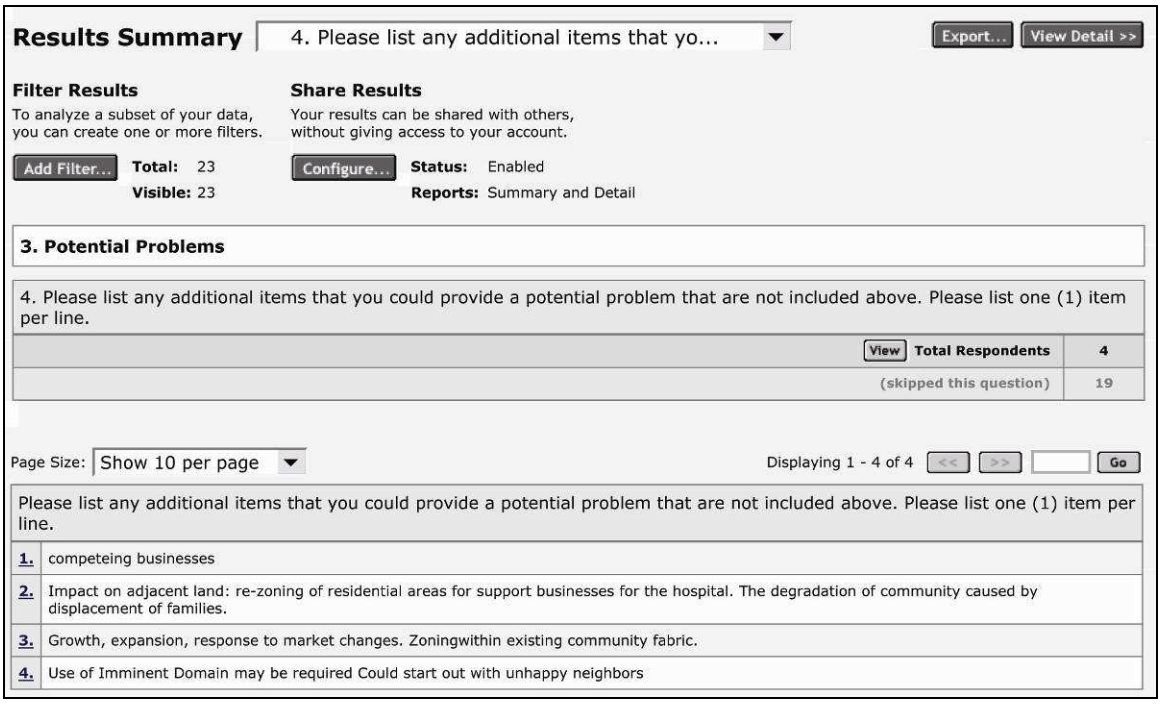
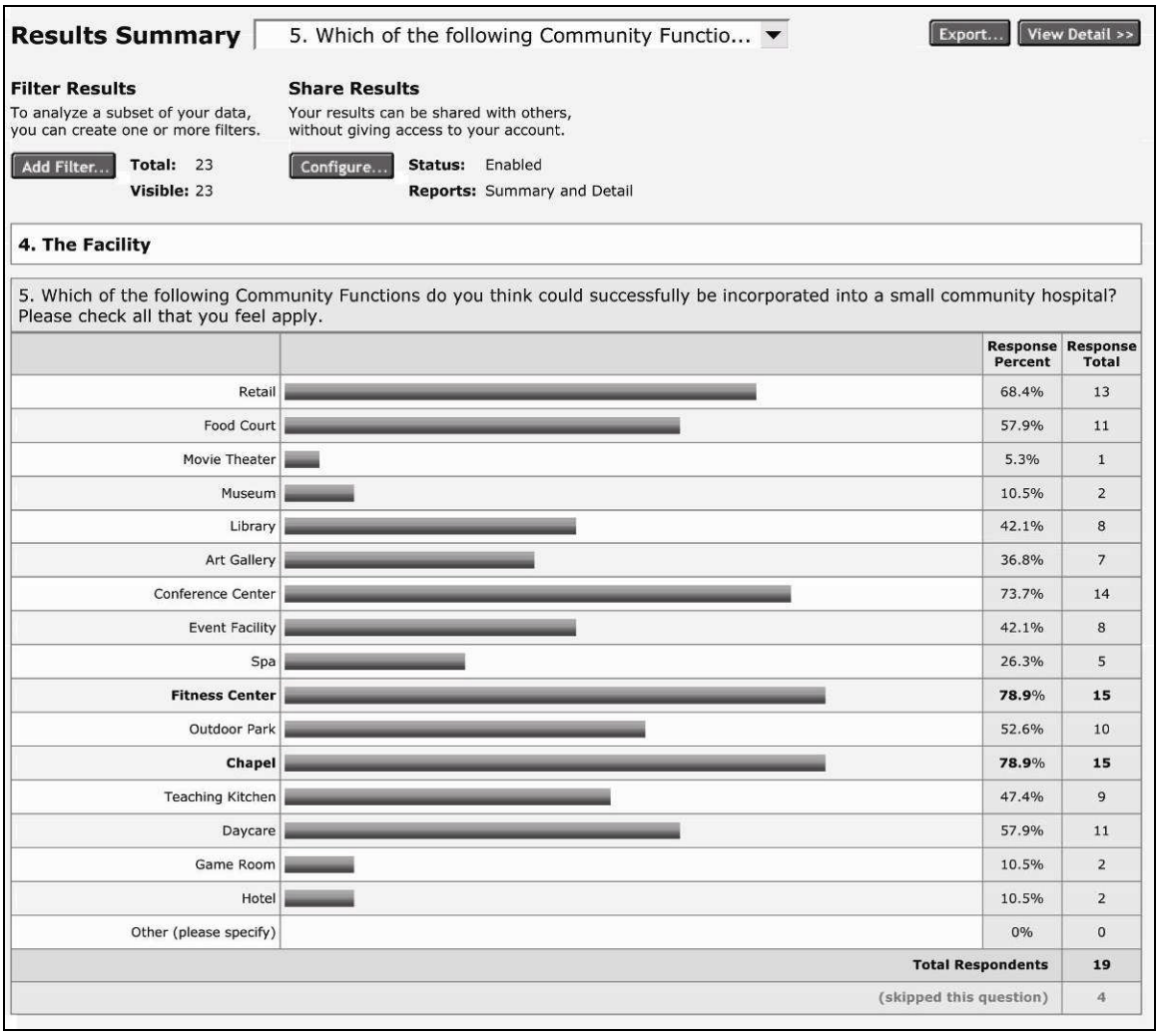


Figure G.4 – Page 4 of 10 (Results - Internet Survey)



Results Summary 5. Which of the following Community Functio... Export... View Detail >>

Filter Results
To analyze a subset of your data, you can create one or more filters.

Add Filter... **Total:** 23 **Visible:** 23

Share Results
Your results can be shared with others, without giving access to your account.

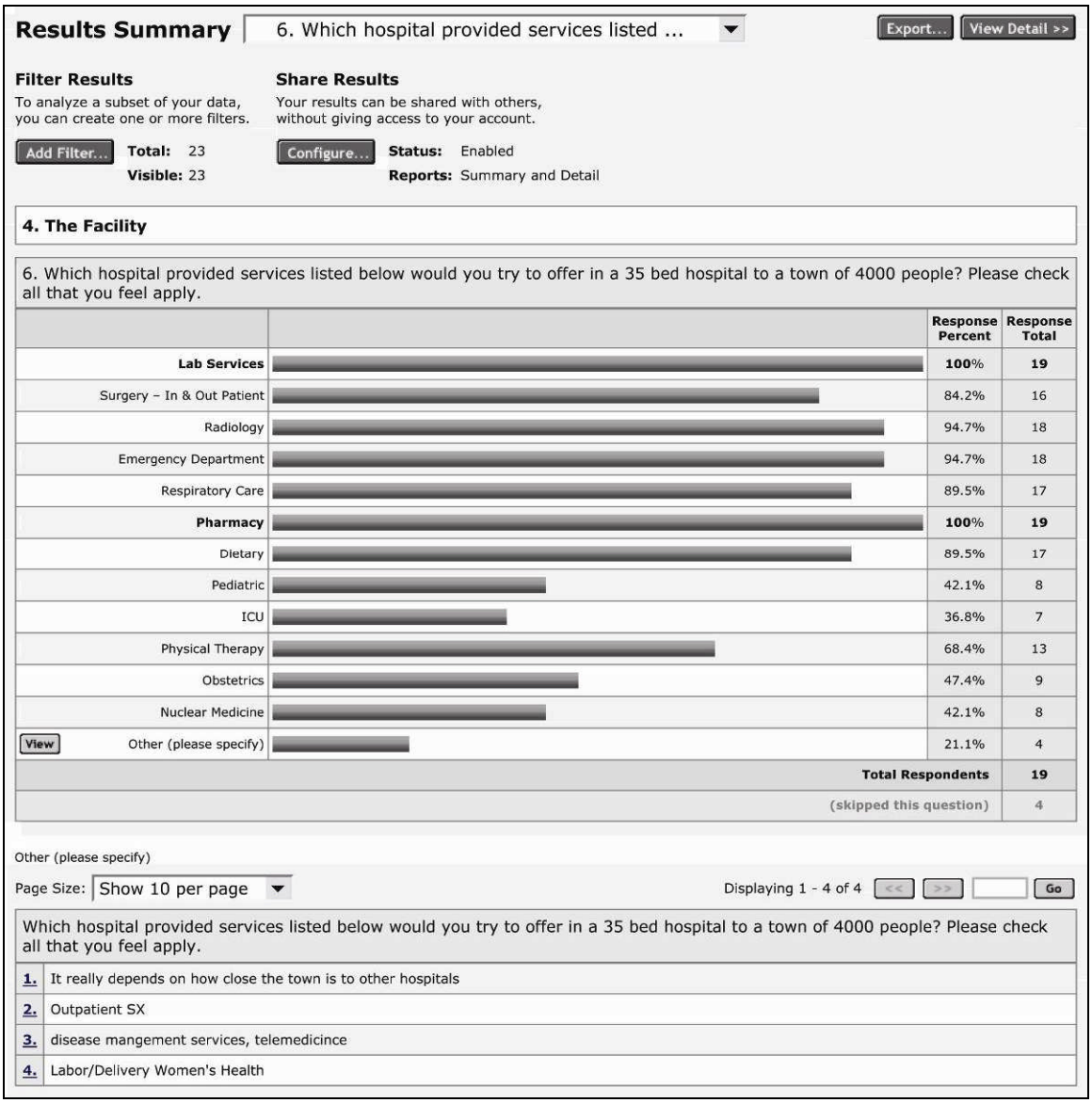
Configure... **Status:** Enabled **Reports:** Summary and Detail

4. The Facility

5. Which of the following Community Functions do you think could successfully be incorporated into a small community hospital? Please check all that you feel apply.

	Response Percent	Response Total
Retail	68.4%	13
Food Court	57.9%	11
Movie Theater	5.3%	1
Museum	10.5%	2
Library	42.1%	8
Art Gallery	36.8%	7
Conference Center	73.7%	14
Event Facility	42.1%	8
Spa	26.3%	5
Fitness Center	**78.9%**	**15**
Outdoor Park	52.6%	10
Chapel	**78.9%**	**15**
Teaching Kitchen	47.4%	9
Daycare	57.9%	11
Game Room	10.5%	2
Hotel	10.5%	2
Other (please specify)	0%	0
	Total Respondents	**19**
	(skipped this question)	4

Figure G.5 – Page 5 of 10 (Results - Internet Survey)



Results Summary | 6. Which hospital provided services listed ... | Export... | View Detail >>

Filter Results
To analyze a subset of your data, you can create one or more filters.

Add Filter... **Total:** 23 **Visible:** 23

Share Results
Your results can be shared with others, without giving access to your account.

Configure... **Status:** Enabled **Reports:** Summary and Detail

4. The Facility

6. Which hospital provided services listed below would you try to offer in a 35 bed hospital to a town of 4000 people? Please check all that you feel apply.

		Response Percent	Response Total
Lab Services		**100%**	**19**
Surgery – In & Out Patient		84.2%	16
Radiology		94.7%	18
Emergency Department		94.7%	18
Respiratory Care		89.5%	17
Pharmacy		**100%**	**19**
Dietary		89.5%	17
Pediatric		42.1%	8
ICU		36.8%	7
Physical Therapy		68.4%	13
Obstetrics		47.4%	9
Nuclear Medicine		42.1%	8
View	Other (please specify)	21.1%	4
	Total Respondents		**19**
	(skipped this question)		4

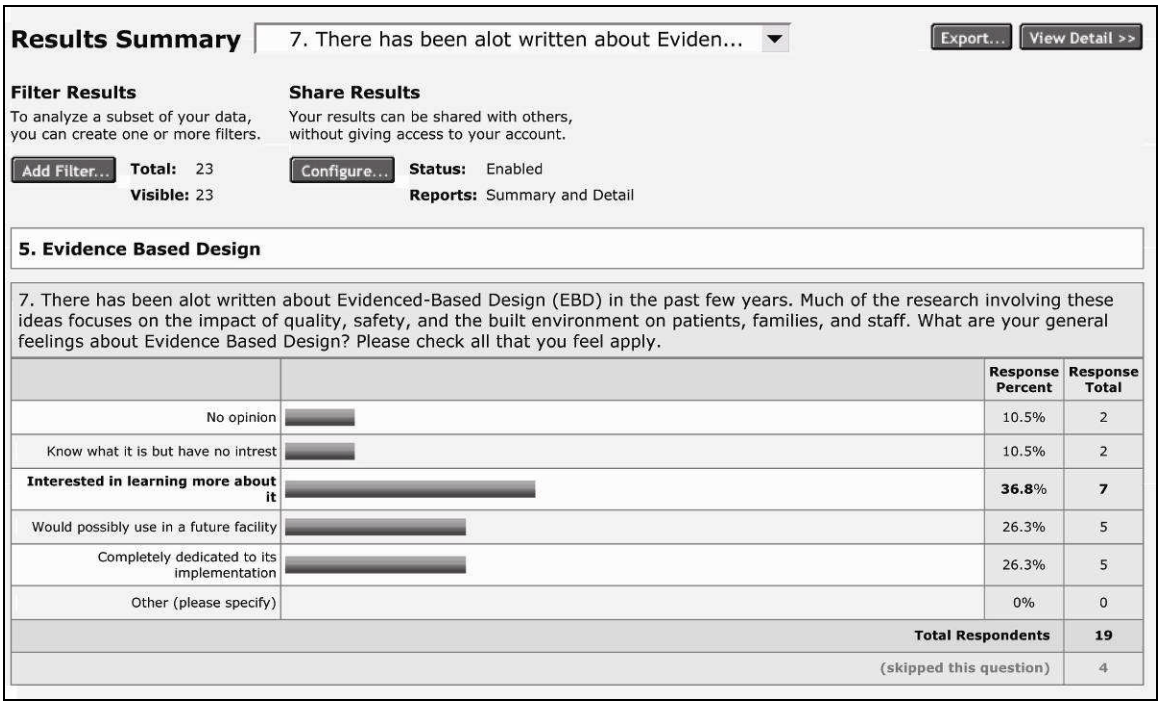
Other (please specify)

Page Size: Show 10 per page Displaying 1 - 4 of 4 << >> Go

Which hospital provided services listed below would you try to offer in a 35 bed hospital to a town of 4000 people? Please check all that you feel apply.

1.	It really depends on how close the town is to other hospitals
2.	Outpatient SX
3.	disease mangement services, telemedicince
4.	Labor/Delivery Women's Health

Figure G.6 – Page 6 of 10 (Results - Internet Survey)



Results Summary | 7. There has been alot written about Eviden... | Export... | View Detail >>

Filter Results
To analyze a subset of your data, you can create one or more filters.

Add Filter... **Total:** 23 **Visible:** 23

Share Results
Your results can be shared with others, without giving access to your account.

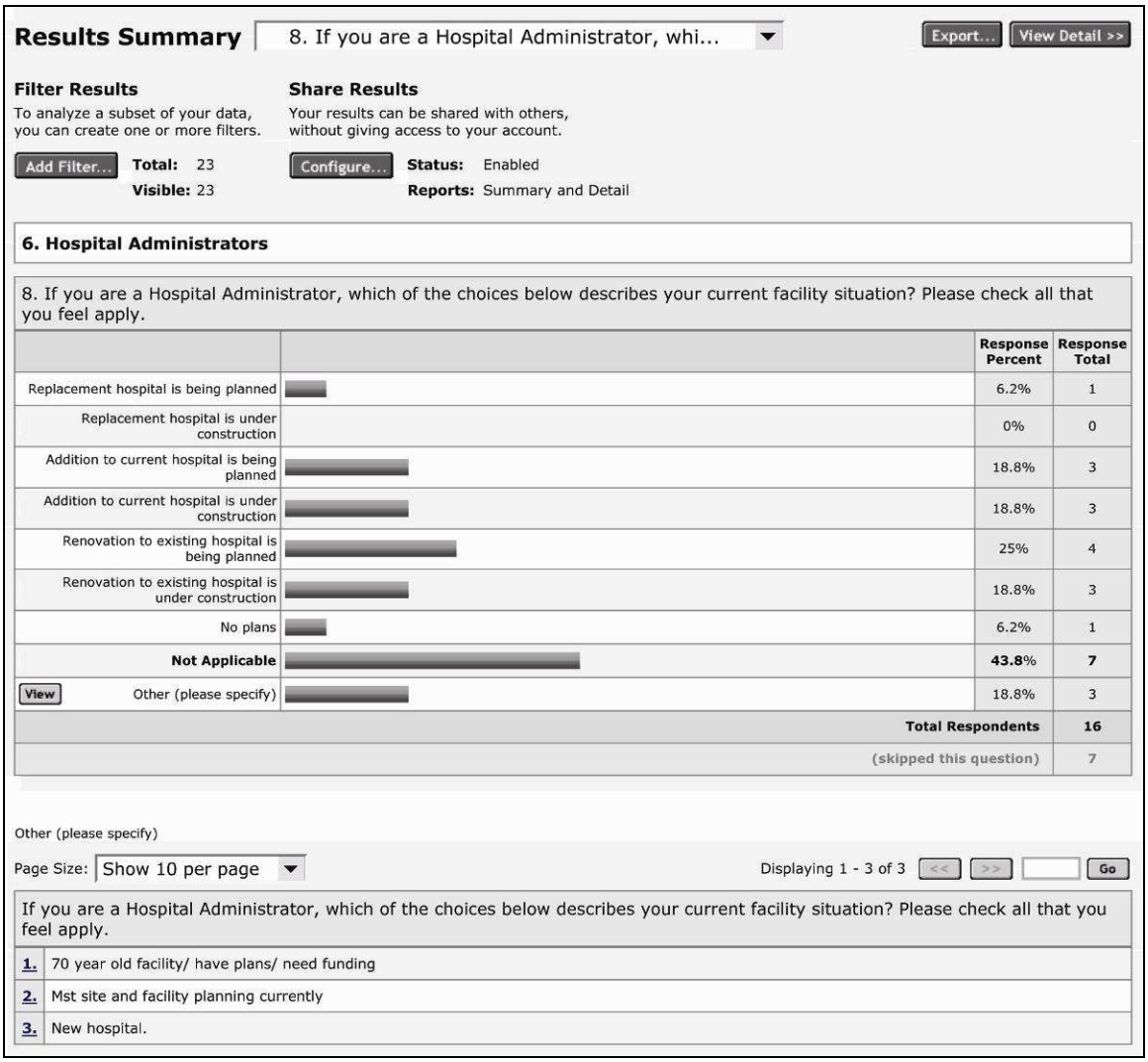
Configure... **Status:** Enabled **Reports:** Summary and Detail

5. Evidence Based Design

7. There has been alot written about Evidenced-Based Design (EBD) in the past few years. Much of the research involving these ideas focuses on the impact of quality, safety, and the built environment on patients, families, and staff. What are your general feelings about Evidence Based Design? Please check all that you feel apply.

	Response Percent	Response Total
No opinion	10.5%	2
Know what it is but have no intrest	10.5%	2
Interested in learning more about it	**36.8%**	**7**
Would possibly use in a future facility	26.3%	5
Completely dedicated to its implementation	26.3%	5
Other (please specify)	0%	0
Total Respondents		**19**
(skipped this question)		4

Figure G.7 – Page 7 of 10 (Results - Internet Survey)



Results Summary 8. If you are a Hospital Administrator, whi... Export... View Detail >>

Filter Results
To analyze a subset of your data, you can create one or more filters.
Add Filter... **Total:** 23 **Visible:** 23

Share Results
Your results can be shared with others, without giving access to your account.
Configure... **Status:** Enabled **Reports:** Summary and Detail

6. Hospital Administrators

8. If you are a Hospital Administrator, which of the choices below describes your current facility situation? Please check all that you feel apply.

	Response Percent	Response Total
Replacement hospital is being planned	6.2%	1
Replacement hospital is under construction	0%	0
Addition to current hospital is being planned	18.8%	3
Addition to current hospital is under construction	18.8%	3
Renovation to existing hospital is being planned	25%	4
Renovation to existing hospital is under construction	18.8%	3
No plans	6.2%	1
Not Applicable	**43.8%**	**7**
View Other (please specify)	18.8%	3
	Total Respondents	**16**
	(skipped this question)	7

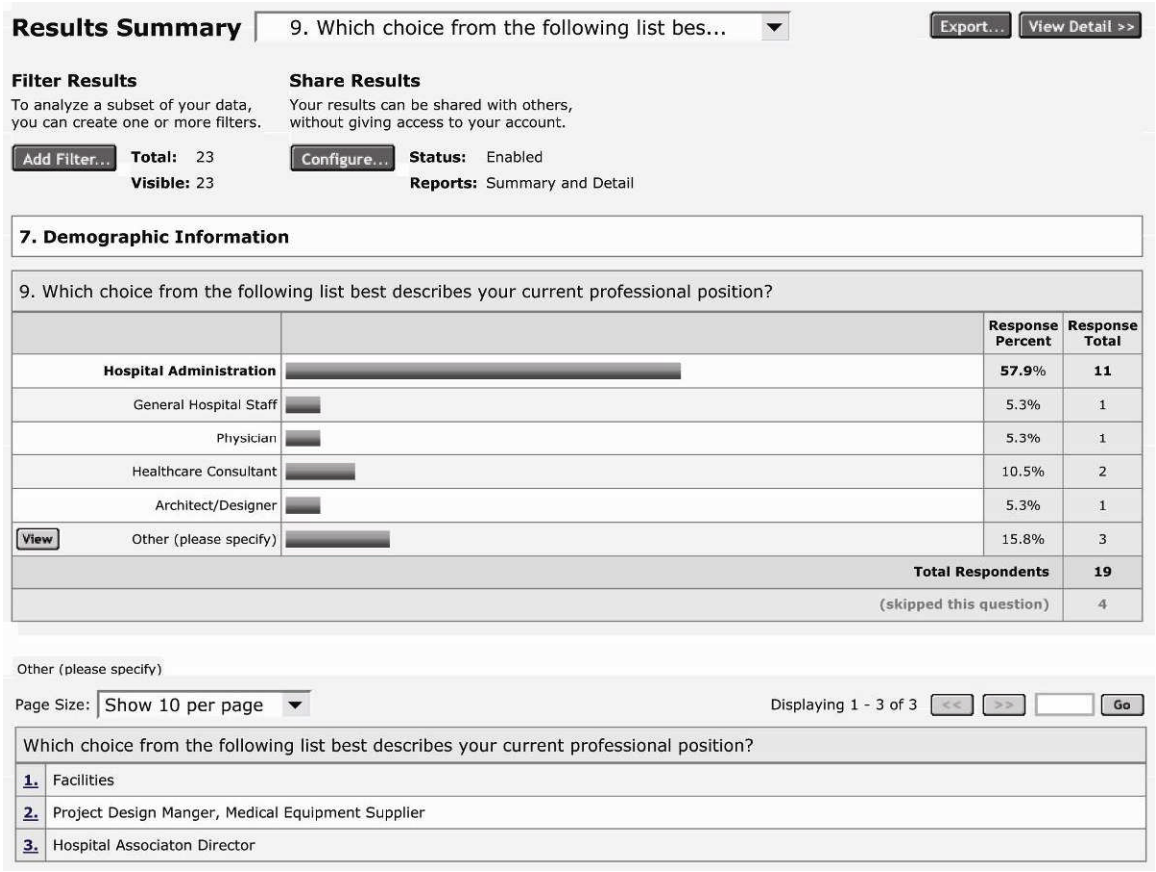
Other (please specify)

Page Size: Show 10 per page Displaying 1 - 3 of 3 << >> Go

If you are a Hospital Administrator, which of the choices below describes your current facility situation? Please check all that you feel apply.

1.	70 year old facility/ have plans/ need funding
2.	Mst site and facility planning currently
3.	New hospital.

Figure G.8 – Page 8 of 10 (Results - Internet Survey)



Results Summary | 9. Which choice from the following list bes... | Export... | View Detail >>

Filter Results
To analyze a subset of your data, you can create one or more filters.

Add Filter... **Total:** 23 **Visible:** 23

Share Results
Your results can be shared with others, without giving access to your account.

Configure... **Status:** Enabled **Reports:** Summary and Detail

7. Demographic Information

9. Which choice from the following list best describes your current professional position?

		Response Percent	Response Total
Hospital Administration		**57.9%**	**11**
General Hospital Staff		5.3%	1
Physician		5.3%	1
Healthcare Consultant		10.5%	2
Architect/Designer		5.3%	1
View	Other (please specify)	15.8%	3
	Total Respondents		**19**
	(skipped this question)		4

Other (please specify)

Page Size: Show 10 per page Displaying 1 - 3 of 3 << >> Go

Which choice from the following list best describes your current professional position?	
1.	Facilities
2.	Project Design Manger, Medical Equipment Supplier
3.	Hospital Associaton Director

Figure G.9 – Page 9 of 10 (Results - Internet Survey)

Results Summary 10. Please elaborate on any other issues tha... Export... View Detail >>

Filter Results
To analyze a subset of your data, you can create one or more filters.

Add Filter... **Total:** 23 **Visible:** 23

Share Results
Your results can be shared with others, without giving access to your account.

Configure... **Status:** Enabled **Reports:** Summary and Detail

8. Additional Thoughts

10. Please elaborate on any other issues that you feel I should consider in terms of using an in-town hospital site. Are there any questions that I did not ask that I should have?

View	Total Respondents	8
	(skipped this question)	15

Page Size: Show 10 per page Displaying 1 - 8 of 8 << >> Go

Please elaborate on any other issues that you feel I should consider in terms of using an in-town hospital site. Are there any questions that I did not ask that I should have?

1.	(1) Might there be economic development funds/grants for redevelopment/reinvigoration of declining/blighted downtown areas? Local authority, state, federal? (2) Imminent domain is a hot issue, but more than appropriate for the situation you are researching. Should be used to allow in-town hospitals to develop a multi-block campus as long as displaced businesses or homeowners (if there are any) could be phased out over a period of time. Urban in-town hospitals already have aggressive real estate development programs. (3) Even small rural hospitals are looking at multistory facilities. Is vertical stacking really an issue? Clients have told me it actually helps reduce their land and staffing costs. One cost could be a ladder truck for the fire dept, but I have seen communities pick up the tab for that!
2.	One of the major issues I run across is the issue of existing physician offices. Often physicians have invested in office buildings close to the existing hospital and may be reluctant to support a replacement hospital that is not on or very near the existing site.
3.	What is an acceptable driving time to a larger hospital for full service care?
4.	Consideration of having all health services located in one area
5.	Recognize that a hospital this size may have a significant impact on the nearest tertiary hospital as well as the community itself.
6.	Impact of available real estate for peripheral uses is critical.
7.	Long-term options for growth of facility and services. Control of adjacent, neighboring businesses and functions (zoning control) traffic circulation and congestion around the facility Provision of affordable equity investment options for medical staff in neighboring office spaces and buildings Patterns of town evolution for other services (shopping, recreation, etc) - are they away from -in-town location of residential growth around the town
8.	Maybe something along the lines of whether or not the existing major roadways would support the intown location or if the hospital could be located on one of those major roadways. Also, is there sufficient surrounding land or existing buildings to support location of physician practices adjacent to the new hospital.

Figure G.10 – Page 10 of 10 (Results - Internet Survey)

APPENDIX H

INFORMATIONAL INTERVIEW-BASED SURVEY FOR:

SELECTED SAMPLE LIST OF HOSPITALS UNDER 60 BEDS W/

TOWN POPULATIONS UNDER 10,000 PEOPLE

Rural Hospital Survey

A Supplement

to
A Proposed Masters Thesis Research Project
by

Anthony Jason Dooley

College of Architecture
Georgia Institute of Technology

This interview survey is aimed at understanding your thoughts about the practicality of relocating small town hospitals onto in-town versus out-of-town sites. Many rural hospitals are built on sites that are outside of town for financial reasons as well as the availability of land. Constructing the facility on an in-town site could provide an important economic and community boost to the existing downtown area.

In the following survey I ask you to rate the relative advantages and disadvantages of using an in-town site for a facility and to evaluate a preliminary design that I have created as part of this thesis.

This survey is entirely voluntary and all responses will be kept confidential. If you have any further questions please contact:

Jason Dooley – 404.216.9629 – gtg300z@mail.gatech.edu
Dr. Craig Zimring – 404.909.9456 – Craig.Zimring@coa.gatech.edu
David Cowan – 404.385.8190 - dcowan@gatech.edu

Introduction

In small towns across America, many local hospitals are being relocated from their current sites to greenfield out-parcels located on local highways that lead out away from the city center instead of being renovated or reconstructed on their current sites. Much of the decision about the location and placement of these new facilities is financial in nature because funds are usually scarce and the land in these undeveloped areas is cheaper and plentiful enough to allow for the new and typically larger hospital, as well as for future growth of the new facility. This shift, however, considerably reduces the possibility for any direct social interaction between the hospital and the town. These decisions not only affect the social and economic structure of the town, but also have larger environmental implications in relation to the depletion of our land and natural resources.

In response to these issues I am proposing an alternative method of relocation for these new facilities to an in-town versus out-of-town site. I am looking at how the facility could embed itself in and engage with the surrounding context of an existing town to foster a heightened sense of harmony within the environment. These facilities have the opportunity to conserve land and resources by relocating closer into a town or even by re-integrating themselves directly as part of the town square. They could look at the incorporation of community functions into them in ways that are beneficial to the town and the hospital through shared land and construction costs. The overall goal would be to create more walkable, accessible institutions that could also help in revitalizing the surrounding downtown areas.

Table H.1 – Final Proposed Facility Program

HOSPITAL PROGRAM	
DESCRIPTION	**AREA**
LOBBY	1,242
ADMINISTRATION	3,164
MEDICAL RECORDS	1,755
MATERIALS MANAGEMENT	1,364
LAUNDRY	1,404
MAINTENANCE	3,402
DIETARY	1,701
OUTPATIENT CLINIC	4,212
EMERGENCY ROOM	3,240
SURGERY	5,380
RADIOLOGY	3,568
OBSTETRICS	2,361
LAB	1,350
PHARMACY	999
PHYSICAL THERAPY	5,270
PATIENT ROOMS	18,711
	59,123

COMMUNITY FEATURES	
EDUCATIONAL CENTER	2,106
FOOD COURT	15,343
RETAIL	9,375
ART GALLERY	1,080
CHILD CARE CENTER	3,018
	30,922

Program:

1. What is your opinion of the sizes allocated for the different departments?

2. Do you feel that anything is missing?

Design Exercise

Figure H.1 - Existing Site Plan

Figure H.2 - Existing Site Section

Figure H.3 - Proposed Ground Floor Plan

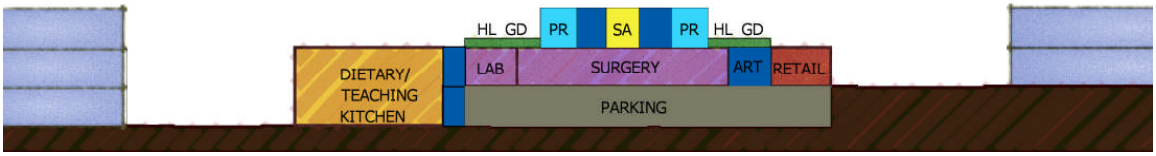


Figure H.4 - Proposed Site Section A

Ground Floor Plan:

3. What is your opinion of underground parking and its costs?

4. The Food Service and Retail areas were used to shield the Service areas and parking from the street. Do you feel that this is successful?

5. The footprint of the hospital is pushed to the edges of the block in a more urban way. Do you feel that this would work in a rural town? Does there need to be more clear space near the street?

6. Do you feel that the building is too big for the site or the area?

Sections:

7. What is your opinion about staggering the arrangement of spaces to make the building feel shorter than it really is in relation to its context?

Figure H.5 - Proposed First Floor Plan

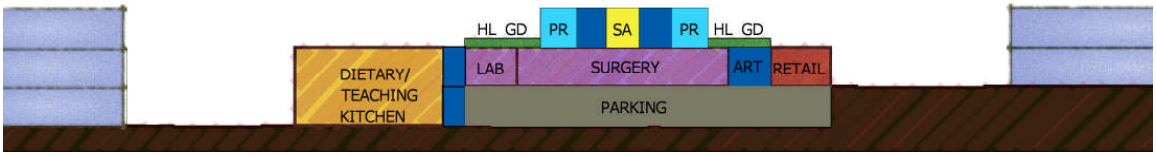


Figure H.6 - Proposed Site Section A

First Floor Plan:

8. Should the hospital areas and public functions be grouped in separate zones as in the plan or should they be mixed in with each other to create a blurrier sense of public vs. private?

9. What is your opinion of a two sided Retail to create a consistent storefront similar to the surrounding context?

10. Does the hospital need a pronounced entrance on the street?

11. Are there enough public entrances?

Sections:

12. Do you feel the staggered arrangement works well for site access? Separating vehicular and pedestrian.

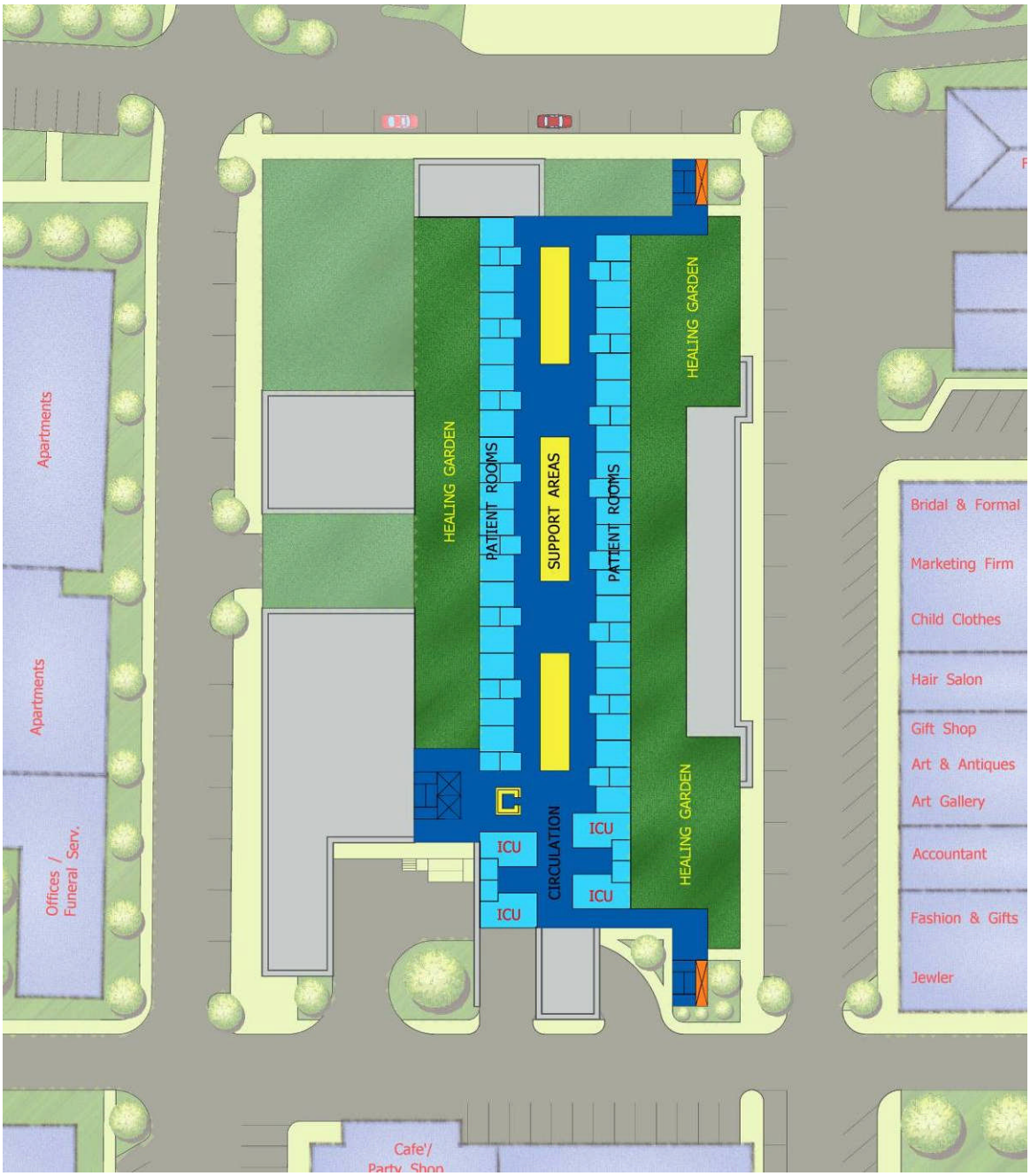


Figure H.7 - Proposed Second Floor Plan

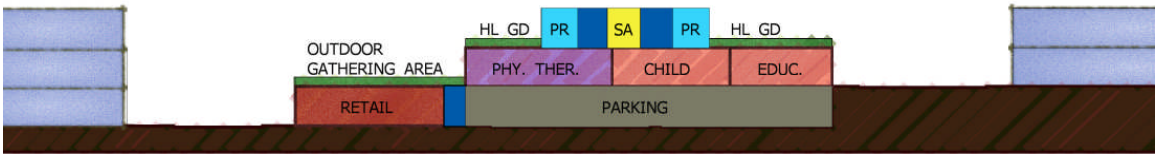


Figure H.8 - Proposed Site Section B

Second Floor Plan:

13. What is your opinion of a straight line run of Patient Rooms vs. a pod configuration?

14. What is your opinion of elevated gardens used to bring nature closer to the patients and replace ground level green spaces that had to be removed for construction?

Sections:

15. Do any areas need to be located on top of each other in the building?

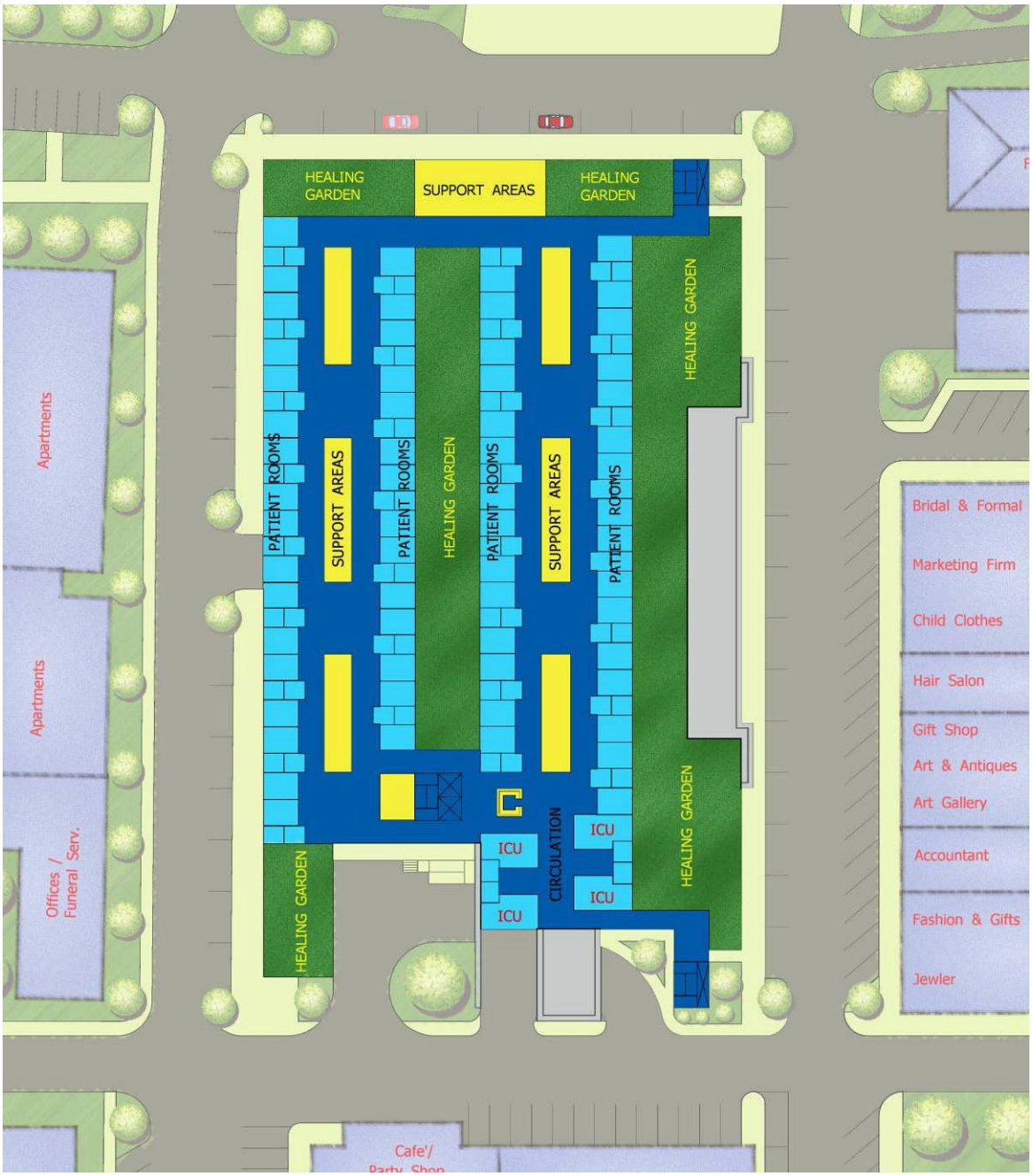


Figure H.9 - Proposed Future Second Floor Plan

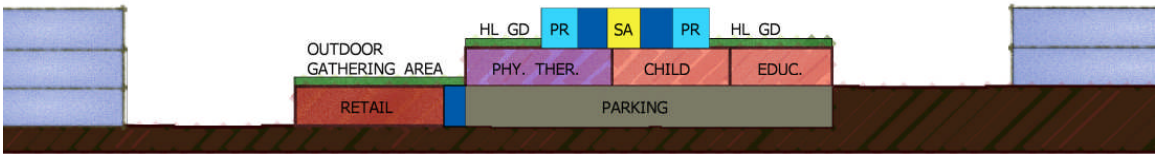


Figure H.10 - Proposed Site Section B

Future Second Floor Plan:

16. What is your opinion of mirroring the Patient area across the Healing Garden to double the occupancy and give all patients an exterior view/ access?

17. Would we need to add more ICU rooms if we doubled the patient floor?

Sections:

18. What is your opinion of using cheaper construction to create the perimeter buildings that but up against the poured in place concrete parking deck to save money?

General Questions:

19. Do you think that a hospital and a community could work together to produce a joint facility and why?

20. What are your feelings about integrating community functions into a healthcare environment and why?

21. Do you think that the average rural hospital has the ability to implement Evidence Based Design features in their facilities?

22. Do you think that a small rural hospital located on an in-town site could help itself financially by constructing and leasing tenant spaces (food service, retail, etc.) as part of the new facility?

23. What services do you think that you could adequately offer to your community remotely through tele-medicine and why would you try to offer these?

Services Study

This information was extracted through a survey of comparable facilities in Georgia under 60 beds and population databases that I created and analyzed in an effort to try to determine correlations between community size, facility size, facility costs, and services offered. The final determination of services will have an affect on the eventual size and departmental configuration of the future facility.

Table H.2 – Georgia Rural Hospital Database Summary

Number of Hospitals In Study	**57**
Average Number of Services Offered	**10**
Average Number of Beds Per Hospital	**35**
Average Number of Hospital Employees	**120**
Average Population of Towns	**4003**

Table H.3 – Top 10 Services Offered at Georgia Rural Hospital Database Facilities

Services	**# of Facilities That Offer It**	**% of Facilities**
In/Out Surgical	56	98%
Lab (Clinical)	55	96%
Radiology	54	95%
Emergency Department	50	88%
Respiratory Care	49	86%
Pharmacy	48	84%
Dietary	32	56%
Pediatric	29	51%
ICU	27	47%
Physical Therapy	26	46%

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